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Understanding Universities' Internal Capabilities and Resources for Effective Regional Engagement

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Research England national knowledge exchange metrics programme

This *Expert Insights paper* was commissioned by UCI, as Research England's national knowledge exchange (KE) metrics advisers, to provide expert insights to inform the Research England-UCI work programme to develop better data and metrics for KE.

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About the UCI Expert Insights Series on University Knowledge Exchange and Regional Economic Growth

There is significant policy interest in the UK in strengthening local economies to fulfil their economic potential and address long-standing spatial disparities. Universities have a significant role to play in helping to deliver policy ambitions in this area, including through their knowledge exchange (KE) activities.

Funders of KE, including Research England, face increasing pressure to develop approaches to enable universities, through KE, to strengthen contributions to regional economic growth. However, progress is hampered by the lack of fit-for-purpose data and metrics capturing universities' potential to contribute to regional growth outcomes. For Research England – which allocates KE funding to universities through both formula-driven allocations and competitions – this constrains their ability to:

- Allocate funding to enable universities to contribute to regional growth through KE
- Track and evaluate the performance of such funding programmes
- Support learning and improvement by universities around how to deliver effective and impactful regional economic growth initiatives

To address this issue, Research England and the Policy Evidence Unit for University Commercialisation and Innovation (UCI) at the University of Cambridge, are working closely to identify and progress opportunities for better data and metrics in this area.

To guide this work, leading academics with expertise on regional economic growth, universities, and KE, were commissioned to produce a series of *Expert Insights Papers* examining where progress could be made. The papers synthesise the latest insights from research and practice, and offer thoughts on where better data and metrics could be developed to meet funder needs

The topics were shaped by a policy evidence roundtable in September 2024, which brought together national funders, policymakers, and academic and sector experts from across the UK to identify key gaps. Key topics include:

- Approaches, opportunities and challenges to fostering regional economic growth (including theoretical and empirical insights, and latest international practices).
- Opportunities and challenges for where and how universities can contribute to regional economic growth through KE.
- Types of regions or regional contexts and how these shape the role universities should play in enabling economic growth through KE.
- University KE pathways for delivering impacts on regional growth
- The types / scale of capabilities, resources and alignment needed within universities to deliver KE aimed at supporting regional growth, and the ability of universities to adapt and reconfigure to deliver.

Executive Summary

Universities have long been central to the UK's economic, intellectual and cultural vitality. Today, their role is rapidly evolving in response to shifting policy priorities and mounting societal challenges. Beyond their core functions of teaching and research, universities are increasingly expected to act as key partners in regional development, collaborating with a variety of stakeholders including industry, local government, and community organisations within their ecosystems.

This report examines how English universities organise their internal resources and capabilities to deliver effective regional knowledge exchange. Drawing on systematic text mining analysis of 125 universities' Knowledge Exchange Framework (KEF) statements, we identify patterns in how institutions structure their regional engagement activities and articulate their internal capabilities.

Our analysis reveals that:

- Universities' KEF statements indicate an emphasis on partnerships beyond traditional industry collaboration; however, references to private sector engagement remain prevalent, appearing in 37% of the statements.
- Public and community engagement emerges as the most prominent mechanism (33% of activities) when both the Growth and Engagement KEF statements are analysed. Engagement strategies often combine "soft" mechanisms (consultancy, training, student placements) with "hard" mechanisms (patents, licensing, spin-offs). However, when focusing on Growth statements alone, a traditional entrepreneurial university model—centred on technology transfer and commercialisation—remains dominant.
- There is an emphasis on formal structures, prioritising organisational governance arrangements (39% of internal resource references).
- Impact narratives remain narrow: economic impact dominates (40% of impact statements), while social, cultural, and civic contributions receive limited attention.

The report identifies three priority areas for enhancing universities' regional engagement effectiveness:

- **Aligned internal organisation**: Universities need better integration between external partnership strategies and internal structures, including incentive systems that recognise diverse forms of engagement alongside traditional academic excellence.
- **Enhanced impact measurement**: Development of frameworks that capture social, cultural, and civic contributions beyond economic metrics, enabling universities to demonstrate their full regional value.
- **Place-sensitive policy approaches**: Recognition of institutional diversity and regional variation in policy design, moving away from one-size-fits-all approaches towards differentiated support frameworks.

Contents

1 Introduction

Universities and other higher education institutions (HEIs) —hereafter referred to collectively as universities— are increasingly recognised as anchor institutions in regional economies. Beyond their traditional missions of teaching and research, they play a critical role in driving innovation, skills development, and social resilience (Benneworth and Cunha, 2015). Their ability to balance traditional academic missions with broader societal engagement positions them as indispensable institutions in shaping regional trajectories.

At the policy level, the UK government's Growth Mission, alongside sectoral initiatives such as Universities UK's 2024 blueprint for change, places universities at the heart of strategies to address pressing national and regional issues — from economic disparities and skills shortages to social cohesion in the wake of Brexit and the COVID-19 pandemic.

However, the capacity of UK universities to deliver on this mandate varies significantly, shaped by internal structures, strategies, and resources, but also by the diverse needs and capabilities of the regions they serve. Given this challenge, this report focuses on the institutional factors that underpin universities' successful regional engagement, and how their impact is measured in a policy environment increasingly shaped by place-based priorities.

This report has two interconnected objectives: 1) to review recent academic discourse on universities' regional engagement by examining their changing roles, stakeholders involved, mechanisms and activities used, internal resources and capabilities available, and the impact they make; 2) to analyse the Knowledge Exchange Framework (KEF) narrative statements using text-mining techniques to identify patterns in how English universities articulate their regional engagement strategies and internal capabilities. Our findings highlight challenges and opportunities for enhancing universities' regional engagement and provide recommendations for policymakers, university leaders, and other stakeholders.

2 The regional engagement role of universities

2.1 From teaching and research to co-creating with a broader range of regional partners

Universities have traditionally focused on teaching and research, but their role has expanded to include active participation in regional development. This evolution is often described as involving distinct phases or "revolutions" (Etzkowitz, 1998). The first phase established teaching and research as core university functions, positioning universities as key drivers of human capital formation and knowledge production (Bonaccorsi, 2017). Through research, universities generate knowledge spillovers that enhance regional firms' research and development (R&D) capacity, supporting both product and process innovation (Jaffe, 1989; Beise and Stahl, 1999). The emergence of the "third mission" introduced broader economic social engagement through entrepreneurial activity and knowledge exchange (Sánchez-

Barrioluengo et al., 2019). This mission emphasises collaboration within innovation ecosystems, involving activities such as collaborative research, consultancy, technology transfer, commercialisation of intellectual property, support for spin-outs and start-ups, and workforce development (Philpott et al., 2011; Guerrero et al., 2015; Hayter et al., 2020). Complementary, Etzkowitz's Triple Helix model further highlights university's role in mediating interactions between academia, industry, and government to foster innovation.

In recent years, universities have been called upon to address grand societal challenges such as climate change (Abo-Khalil, 2024). This shift aligns with mission-oriented innovation policies designed to address grand societal challenges (Mazzucato, 2018). Scholars now advocate for a spatial dimension to these missions, reflecting specific needs at smaller geographical levels (Uyarra et al, 2025a, 2025b). Henderson et al. (2024) for instance introduce the concept of "micro-missions"— smaller-scale initiatives aimed at resolving specific socio-economic or ecological issues within regional contexts. This perspective emphasises universities' role as convening spaces where diverse stakeholders co-design and implement initiatives responding to local manifestations of global challenges.

This shift moves beyond traditional technology transfer models towards more collaborative, transdisciplinary approaches that blur institutional boundaries. Central to this is the concept of co-creation—a model of engagement where universities act not merely as providers of knowledge, but as collaborative partners working alongside industry, government, and civil society, with universities facilitating networks and building capabilities (Benneworth and Cunha, 2015). This approach is characterised by mutual collaboration and co-production (Kelleher and Ulrichsen, 2024), where local and regional stakeholders become co-creators and active partners rather than merely beneficiaries of university knowledge. Rather than prioritizing unidirectional knowledge transfer or commercialisation alone, co-creation involves joint problem-solving and the development of context-sensitive solutions (Perkmann et al., 2013; Petersen et al., 2022). These developments reposition universities as embedded, reflexive actors contributing to societal transformation through collaborative engagement.

This evolution towards co-creation requires universities to develop new institutional capabilities. Rossi et al. (2022) highlight the importance of "blurring" boundary-spanning practices—informal, trust-based, and non-hierarchical collaborations—that enable exploratory responses to complex challenges. Trencher et al. (2014) emphasise that "co-creation for sustainability" demands transdisciplinary partnerships that integrate academic knowledge with practical expertise. Such engagement requires universities to develop capabilities including the ability to facilitate multi-stakeholder processes, navigate complex governance arrangements, and adapt research practices to address real-world problems in real-time. This represents a fundamental shift from universities as knowledge producers to universities as collaborative problem-solvers embedded within regional innovation ecosystems.

2.2 Broadening stakeholder engagement

The effectiveness of the collaborative approach described above depends on universities' relationships with local stakeholders and their capacity to act as network activators rather than isolated knowledge producers. Universities now engage with an increasingly diverse ecosystem

of partners, encompassing not only traditional industry collaborators but also public sector bodies, third sector organisations, cultural institutions, and community groups.

Industry partnerships remain important but have diversified to include not only large multinational corporations and research-intensive firms, but also small and medium enterprises (SMEs), start-ups and social enterprises. Public sector engagement is increasingly important and encompasses central and local government departments, regulatory bodies, healthcare trusts, educational institutions, and policy-making organisations (Thune et al., 2023). The third sector represents a particularly rich area of partnership, including charities, non-governmental organisations, community groups, faith organisations, and advocacy bodies working on issues from health, social justice to environmental sustainability (Hall et al., 2025). Cultural institutions such as museums, galleries, theatres, and heritage organisations have become increasingly important partners, particularly for arts and humanities disciplines (Olmos-Peñuela et al., 2014).

REF2021 case studies have shown that these partnerships can deliver deep, place-based impact. Arts and humanities disciplines in particular have shown strong capacity to generate social value and strengthen regional identity (Kemp et al, 2023). Recent discussions emphasise a broader view of university engagement, recognising the societal contributions of non-STEM disciplines, which remain undervalued in traditional impact assessments (De Jong and Muhonen, 2020; Marzocchi et al., 2023) and are not always well captured by traditional knowledge exchange (KE) metrics (Rossi et al., 2024).

2.3 Mechanisms of universities' regional engagement

Universities employ a wide range of KE mechanisms to engage with businesses, public bodies, and community organisations. They range from commercialisation-focused activities—such as patents, licensing, and spin-out creation—to more collaborative and relational forms, including consultancy, contract research, student placements, and graduate employment (Philpott et al., 2011). While the former are typically associated with the direct exploitation of research and are concentrated in a small number of research-intensive institutions and sectors (Hughes and Kitson, 2012; Breznitz and Feldman, 2012), the latter play a crucial role in addressing applied problems and strengthening regional human capital (Faggian and McCann, 2009). These distinctions are often conceptualised as 'hard' and 'soft' KE mechanisms respectively, offering a useful framework for understanding the diversity of university engagement strategies.

In practice, universities combine multiple activities—such as internships, Continuing Professional Development (CPD) programmes, and contract research—tailored to the needs of their regional context (Reichert, 2019). These integrated approaches help to establish trust and lay the groundwork for longer-term partnerships (Geiger and Sá, 2008). Different universities also differ in the types of activities they prioritise and the stakeholders they engage with. Large research-intensive universities tend to engage in a broad range of activities, including collaborative research, spin-out formation, and international partnerships, while teaching-focused universities are often more embedded in their local communities and concentrate on applied KE activities such as consultancy, training, spin-offs and support for local businesses (Huggins et al., 2012; Uyarra, 2010; Sánchez-Barrioluengo et al., 2019).

These differences reflect not only institutional missions and capabilities, but also different needs and policy contexts of the regions they serve (Sánchez-Barrioluengo and Benneworth, 2019). Internally, institutions build relationships and expertise over time, which can lead to specialisation in particular forms of engagement. While this can support depth and continuity, it may also make it harder for some universities to diversify their KE activities or respond to new regional challenges (de la Torre et al., 2018). Externally, the regional context and broader policy environment play significant roles. In areas with dynamic economies or higher levels of business R&D, universities often benefit from a broader range of potential partners and stronger local demand for innovation support (D'Este and Iammarino, 2010; Ulrichsen, 2018). Conversely, in regions with fewer large firms or weaker innovation systems, universities may have more limited opportunities and need to take more proactive roles in supporting local economic development (Ulrichsen, 2018).

The UK policy environment has significantly influenced universities' regional engagement capabilities over the past two decades. The introduction of the Higher Education Innovation Fund (HEIF) in 2003 provided dedicated funding streams for KE activities, with recent iterations emphasising strategic, place-based approaches and institutional collaboration. Changes to research funding mechanisms, including the emphasis on impact within the Research Excellence Framework (REF), have created additional incentives for universities to demonstrate societal benefits. However, the abolition of Regional Development Agencies in 2010 and introduction of Local Enterprise Partnerships created a more fragmented landscape for regional coordination (Charles et al., 2014). More recently, the emergence of Combined Authorities and devolution deals has created new opportunities for universities to engage with regional governance structures and contribute to place-based economic strategies.

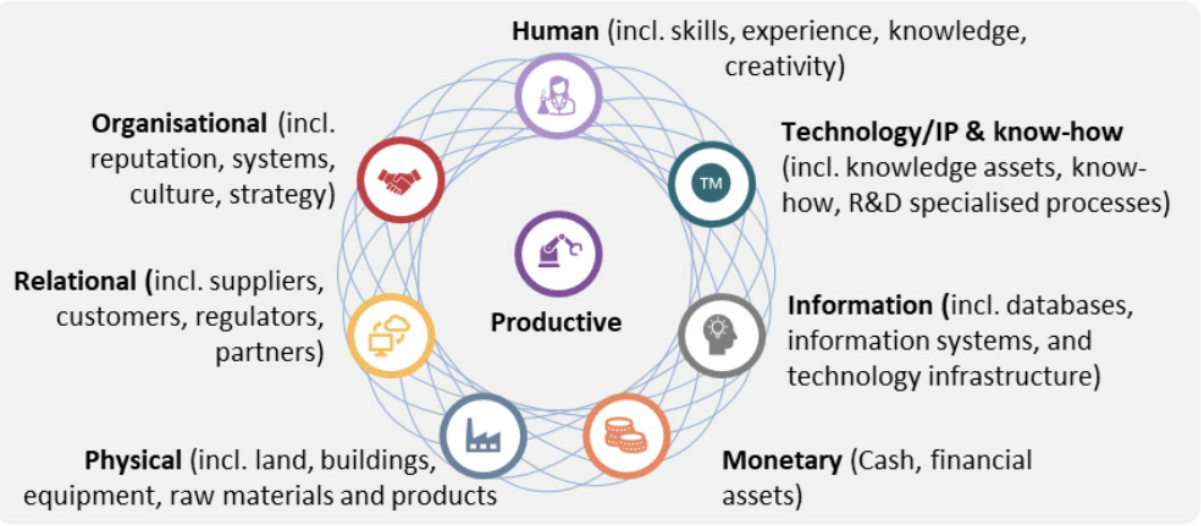
2.4 Internal Resources and Capabilities

Universities vary significantly in their missions, knowledge bases, strategic priorities, institutional histories, and socio-economic contexts (Ulrichsen et al., 2023). These differences shape the resources they can mobilize for KE and determine their capacity to interact with external partners for delivering regional socio-economic benefits. Applying the lens of the Resource-Based View (RBV) of organisational strategy (Wernerfelt, 1984), universities possess tangible and intangible assets, such as intellectual property, human resources, organisational structures, and infrastructure. When combined with organisational capabilities (Figure 1), these assets enable universities to create long-term value for regional economies and communities (Teece et al., 1997).

Knowledge assets are among the most critical resources. They are generated through research including intellectual property (IP) such as patents, copyrights, trademarks, software, and other proprietary outputs. Effective management of these assets supports regional innovation by facilitating the commercialisation and practical application of academic knowledge (Kelleher and Ulrichsen, 2024). For example, a university with strong expertise in biotechnology can collaborate with local biotech firms to co-develop new products or processes, thereby driving regional economic growth. Crucially, the alignment between universities' knowledge assets

and specific place-based challenges strongly determines the effectiveness and impact of KE efforts (Arora et al., 2020; Henderson et al., 2024).

Figure 1. Key resources (capitals) at organisational level



Source: Kelleher and Ulrichsen (2024).

Equally important are human resources, encompassing the skills, experience, and expertise of academic staff, professional services personnel, students and alumni. Academics with prior experience in industry or the public sector often serve as effective boundary-spanners, translating complex research into practical, actionable solutions for external partners, while students contribute through placements, applied projects, and graduate recruitment pipelines—particularly when these align with regional labour market demands (Ulrichsen et al., 2023).

Physical and financial resources also play a vital role. Specialist infrastructure—such as advanced laboratories, prototyping centres, simulation suites, and digital testbeds—enables collaborative research and innovation, particularly with R&D-intensive firms and public sector organisations (Ulrichsen, 2018). Formal structures, including Technology Transfer Offices (TTOs), IP management systems, and research administration units support commercialisation of research and facilitate partnerships with industry and public sector actors. Universities with well-developed and resourced support functions are better positioned to integrate their research assets into regional innovation ecosystems and to contribute sustainably to local economic and social development (Arora et al., 2020; Kelleher and Ulrichsen, 2024). Access to diverse financial resources, from core public (such as Quality-Related (QR) or Higher Education Innovation Fund (HEIF)) to competitive grants and philanthropic donations, underpins universities' ability to sustain long-term regional engagement (Henderson et al., 2024).

While internal resources form the foundation, it is the capabilities within universities that determine how effectively these resources are mobilised and combined to achieve impact. Capabilities reflect the institution's capacity to identify, coordinate, and respond to regional engagement opportunities, operating both at individual and organisational levels.

At the individual level, KE success depends on skills such as effective communication with non-academic audiences, interdisciplinary collaboration, and commercial acumen. The ability to secure funding, navigate institutional processes, and leverage professional networks further enhances individuals' capacity to sustain impactful KE activities (Ulrichsen et al., 2023).

At the organisational level, leadership, strategic vision, and institutional support systems shape the culture for KE. Effective leadership at university and departmental levels provides direction, allocates resources, and creates incentives that values and rewards KE, encouraging experimentation and innovation in partnership models (Ulrichsen et al., 2023). Institutional support mechanisms—such as dedicated KE offices, workload models recognising engagement efforts, training programmes, and reward structures—may either enable or constrain individual contributions.

2.5 The Impact of Universities' Regional Engagement

Universities' regional engagement generates multiple forms of impact that extend across economic, innovation, and societal domains. Understanding these varied contributions provides essential context for examining how universities organise their internal capabilities to deliver regional value. This section outlines key impact categories whilst highlighting the methods used to assess these contributions and the challenges in measuring them effectively.

2.5.1 Economic Contributions

Universities contribute to regional economies through multiple pathways beyond their traditional roles as educators and researchers. Their direct economic contributions include the creation and commercialisation of knowledge, enterprise support, and workforce development. These are commonly assessed using indicators such as spin-out formation, patents, licensing income, and revenue from contract research (Sam and van der Sijde, 2014). Commercialisation provides a tangible route for translating academic expertise into economic benefit, fostering innovation and competitiveness at the firm level.

Universities also play a role as major employers and purchasers, generating economic spillovers across labour markets and supply chains. Regional input-output models often capture these effects, along with data on graduate retention, student expenditure, and staff-led start-ups (Drucker and Goldstein, 2007).

Beyond direct economic activity, universities play a critical role in sectoral transformation through partnerships that support industrial renewal, diversification, and workforce alignment. Collaborative relationships with businesses facilitate technological upgrades, innovation adoption, and improved access to skilled labour (Trippl et al., 2015; Bratukhina, 2020). These engagements are evaluated using metrics such as the number and scope of collaborative research projects, industry co-authorship, feedback from business engagement, and sector-specific innovation outcomes. However, outcomes are mediated by local absorptive capacity—the degree to which regional firms and institutions are able to integrate and apply university-generated knowledge (Arora et al., 2020; Rodríguez-Pose and Wang, 2025).

2.5.2 Strengthening Innovation Ecosystems

Recent research also places universities at the heart of innovation ecosystems (Heaton et al., 2019; Carayannis and Morawska-Jancelewicz, 2022). Beyond knowledge production, universities contribute to regional innovation through a wide range of mechanisms that extend across infrastructure provision, skill development, and the facilitation of cross-sectoral collaboration. Their involvement in prototyping, technical problem-solving, and access to specialised facilities and talent has been shown to accelerate innovation processes in local firms, especially in knowledge-intensive sectors. Additionally, universities often act as connectors within the regional innovation ecosystem, strengthening ties between firms, government agencies, and other institutions, thereby reducing coordination failures and improving innovation system performance (Kempton et al., 2021).

Their impact also extends to the broader enabling environment for innovation. Investments in research facilities, contributions to the regional skills base, and efforts to attract external R&D funding or talent contribute to the competitiveness of the local innovation system (Kitson, 2019). Moreover, universities increasingly support region-wide transformations by aligning research and engagement activities with long-term societal challenges, including inclusive growth, digitalisation, and sustainability transitions (Rinaldi et al., 2018; Trippl et al., 2023).

Despite growing recognition of universities' roles in innovation ecosystems, assessing their regional impact remains complex and methodologically demanding (Schlegel et al., 2022). Early foundational work (e.g., Jaffe, 1986; Acs et al., 1992) demonstrated links between academic research and local innovation, often using patent data as a proxy. More recent studies have adopted natural experiments—such as the establishment of new universities—to identify causal effects, finding substantial increases in regional patenting (Cowan and Zinovyeva, 2013; Andrews, 2023). However, relying solely on patent-based indicators can obscure important heterogeneity. The innovation impact of universities varies significantly depending on institutional type, research orientation (basic vs. applied), and regional economic context, including agglomeration effects and local absorptive capacity (Arvanitis et al., 2008; Schlegel et al., 2022). While commercialisation metrics like spin-outs and licences remain prominent, broader contributions such as talent development, network formation, and institutional change are often under-assessed. In response, there is a growing movement toward alternative methodologies to capture impact like mixed-method approaches that combine quantitative indicators with qualitative tools such as case studies, stakeholder interviews, and narrative-based evaluations (Jonkers et al., 2018). These developments reflect a growing consensus around the need for context-sensitive, multidimensional tools to capture the full range of university contributions to innovation ecosystems.

2.5.3 Contributions to Sustainability and Wider Societal Issues

Universities are increasingly moving beyond traditional research models to actively engage with sustainability challenges. Many institutions now embrace "co-creation for sustainability," working directly with industry, government, and communities to design and implement solutions rather than simply studying problems (Trencher et al., 2014).

Modern universities are increasingly adopting sustainable campus initiatives, such as energy efficiency, waste reduction, and green mobility. These efforts serve as practical examples for students and staff, embedding sustainability into everyday university life. Furthermore, universities sustainability themes are integrated into curricula and research, equipping graduates with green, digital, and ethical skills for the future workforce. These interdisciplinary and mission-oriented activities directly support the United Nations Sustainable Development Goals (SDGs) while addressing local societal needs (Abo-Khalil, 2024).

Universities also actively engage with public, private, and third-sector partners – often acting as "living laboratories" – to co-develop place-based solutions to complex societal challenges (Benneworth and Cunha, 2015; Gibbs and O'Neill, 2017). Recent studies highlight the growing impact of university alliances and cross-sector collaborations, which are developing new frameworks and indicators to assess societal benefits—particularly in supporting sustainable communities, local development, and engagement with marginalised groups (Corazza et al., 2024).

Societal impacts are assessed through widening participation rates, engagement in policy co-design, contributions to the SDGs, and institutional sustainability reporting. However, such impacts often materialise over longer timeframes and may lack readily available metrics. As such, universities and funders are beginning to invest in new methods—such as participatory evaluation and civic engagement indices—to better understand these contributions (Cinar and Benneworth, 2021; Hansen, 2022).

2.5.4 Uneven Regional Impacts of Universities

Despite their potential as engines of regional growth, universities often deliver uneven impacts across territories. Regions with strong industrial bases, dense knowledge networks, and well-established innovation ecosystems—typically found in major cities and core economic areas—are better positioned to capitalize on university expertise (Uyarra, 2010). These regions benefit from synergies between university research and existing industrial capabilities, creating pathways for knowledge transfer and commercialisation that are difficult to replicate in less developed contexts. In contrast, peripheral or left-behind regions frequently face structural challenges such as weak industrial demand, low levels of innovation activity, and limited civic infrastructure (Bonaccorsi, 2017; Marques et al., 2006). These conditions constrain the capacity of universities to generate transformative regional impact, particularly where local demand for advanced knowledge is fragmented or underdeveloped.

This disparity highlights the need to set realistic expectations about the role universities can play in varying regional contexts. Coenen (2007) cautions against "exaggerated expectations" for universities, particularly in peripheral regions where institutions may lack the necessary resources and connections to bridge the gap between academic knowledge and local economic needs effectively. Similarly, it is important not to conflate university research excellence with the capacity of regional economies to absorb and benefit from innovation (Goddard et al., 2013).

However, emerging evidence demonstrates that universities can still play a vital role in fostering inclusive, place-based development in peripheral regions. The EU-funded RUNIN (Role of

Universities in Innovation and Regional Development) project, for example, documents how universities in less-developed areas can act as institutional entrepreneurs, building innovation capacity, convening diverse stakeholders, and contributing to regional identity formation (Goddard et al., 2014; González-Pernía et al., 2015). By aligning research and teaching with local development priorities and fostering trust-based partnerships across business, government, and civil society, universities can help to reframe regional development trajectories (Benneworth et al., 2024; Medina-Bueno et al., 2024).

These examples emphasise the value of long-term, embedded engagement strategies tailored to local strengths and needs. The effectiveness of these contributions depends on universities' ability to navigate complex regional innovation systems and align their activities with the specific assets and challenges of their regional contexts (Uyarra, 2010).

3 Data and Methodological Approach

This section presents the main empirical findings of the study analysing narratives of how universities across England articulate their KE priorities at regional level. It helps to assess patterns of regional engagement that underpin effective university contribution to the place they serve. The study builds on an exploratory analysis of four key dimensions: *stakeholders involved, mechanisms and activities used, internal resources and capabilities available*, and *their intended impact*.

3.1 Data Sources

The empirical analysis presented here is based on data collected from the latest version of the Knowledge Exchange Framework (KEF) dashboards published by Research England. KEF serves as a crucial tool for assessing and enhancing how HEIs in England translate their research and expertise into tangible benefits for the economy and society. It reports a diverse range of KE activities—from business collaborations and intellectual property commercialisation to public engagement and regional development— undertaken with their external partners, from businesses to community groups. By combining quantitative data-driven metrics with qualitative narrative statements and clustering universities for fair comparison, the KEF provides a mechanism for institutions to benchmark their performance, identify areas for improvement, and demonstrate their significant real-world impact beyond traditional academic pursuits.

Compared to other commonly used institutional documents such as mission statements, which have been used to explore aspects such as technology transfer structures (Fitzgerald and Cunningham, 2016), system characteristics (Seeber et al., 2019), or institutional orientation (Cuesta-Delgado et al., 2024), KEF narratives provide richer and more complex material for text-mining analysis of how universities articulate their role in regional development.

In this paper, rather than using the defacto clusters of universities that group institutions based on their internal strengths and opportunities for KE (Ulrichsen, 2023), we group them according to the main region where they are located according to the standard NUTS1 classification. We

subdivided London into *Inner London* and *Outer London* to reflect both significant socio-economic and institutional differences within the capital and to avoid the disproportionate statistical weight that London would otherwise exert given its high concentration of universities. This resulted in a total of 10 regional groups with the number of universities analysed in each group indicated in Table 1.

Table 1. Distribution of universities per NUTS1 in England included in the analysis

Nuts1	No. of HEIs
UKC – North East	5
UKD – North West	15
UKE - Yorkshire and the Humber	10
UKF - East Midlands	9
UKG - West Midlands	12
UKH - East of England	10
UKI-Inner	24
UKI-Outer	8
UKJ - South East	17
UKK - South West	15

3.2 Methodological Approach

This research applies a Dictionary-Based Text Analysis method, following the principles of Knowledge Discovery in Text (KDT), an approach derived from Knowledge Discovery in Databases (KDD). The process involves three main stages for the data preparation (data collection, data pre-processing and classification) that is subsequently analysed and described graphically. The core element of this process is the classification stage, for which we applied the dictionary method (Grimmer et al., 2022). Compared to AI-based models which are often opaque ("black box") and require expert validation due to accuracy concerns (Borchardt et al., 2023), the dictionary method offers a transparent and efficient alternative, though it is limited to term-level analysis without contextual interpretation (Borchardt et al., 2023).

Phase 1 - Data Collection

We used the narrative statements submitted and published as part of KEF3 in 2023 and available online in the KEF platform, covering the activities undertaken by universities during the period 2019–2022. Data was collected on the 6th of May 2025 for 125 higher education providers (see Annex III). These narratives are crucial for explaining the "why" and "how" behind the metrics, allowing universities to tell their unique KE story. The main narrative statement used in this work includes two sections: a) public and community engagement (hereafter "Engagement" statement), and c) local growth and regeneration (hereafter "Growth" statement). We consider that both statements are relevant to analyse the regional contribution of universities because a) the Growth statement focuses explicitly on activities supporting local economic development, as defined in the KEF questionnaire, and b) we argue that the engagement statement is largely local in nature and reflects university's civic commitment to

its surrounding communities. Both sections provide a structured yet open format that allow institutions to describe their KE activities in detail. The Engagement template offers up to 2,500 words covering strategy, practical support for staff and students, illustrative activities, outcomes achieved, and internal evaluation processes and supporting culture to build success . Similarly, the Growth narrative includes another 2,500 words structured around strategic approach, activities delivered, and reported outcomes and/or impacts.

Phase 2 - Data Pre-processing: cleaning and classifying key terms

Following data collection, the pre-processing phase involved cleaning and standardising the texts. This included applying lemmatisation to reduce words to their root forms, removing punctuation, converting text to lowercase, and eliminating stop words.

Table 2 provides a descriptive overview of the processed textual data derived from the KEF narrative statements. It includes the total number of tokens (words) in the original full-text versions of the Growth and Engagement sections, as well as the number of unique lemmas identified after preprocessing (i.e., cleaning and lemmatisation).

Table 2. Descriptive statistics of token counts and lexical diversity in KEF statements.

Variable	Mean	Std Dev.	Min.	25%	50%	75%	Max.
Growth Statement section for 125 HEI							
Total tokens occurrences in full texts	2,692.55	254.36	1,559	2,557	2,776	2,855	3,144
Total stopwords occurrences	855.53	88.01	462	819	865	912	1,030
Unique lemmas in cleaned documents	631.98	69.09	434	595	640	678	794
Engagement Statement section for 125 HEI							
Total tokens occurrences in full texts	2,854.83	205.99	1,866	2,806	2,882	2,957	3,376
Total stopwords occurrences	901.00	90.06	557	854	913	968	1,073
Unique lemmas in cleaned documents	665.96	57.53	485	638	668	698	795

Source: Authors' analysis based on the narrative statements submitted to KEF3 (2023), retrieved in May 2025. Token counts include all words in the original web-published statements. Unique lemmas refer to distinct word stems identified after text cleaning and lemmatisation (lowercasing, punctuation removal, and stopword filtering). Percentile values correspond to the 25th, 50th (median), and 75th percentiles across 125 HEIs.

On average, Growth statements contain approximately 2,693 tokens, ranging from 1,559 to 3,144 words, with 50% of texts falling between 2,557 and 2,855 words. In comparison, Engagement statements are slightly longer, with a mean of 2,855 tokens and a range between 1,866 and 3,376 words. The interquartile range indicates that half of the Engagement texts fall between 2,806 and 2,957 tokens. After removing stopwords and applying lemmatisation, the average number of unique lemmas per document was 632 in the Growth statement and 666 in the Engagement section. These figures confirm that Engagement narratives are not only longer but also exhibit a slightly broader lexical diversity. One limitation of this analysis is that non-textual content such as figures, visual schemes, or external data links is not captured in the token count. However, key ideas referenced in such content are often summarised in the accompanying narrative and remain visible at a high level in the text mining process.

To classify the terms, we first constructed a dictionary, beginning with a set of expert-derived seed terms extracted from the literature and refined through initial data exploration and author judgement for each category of interest including: stakeholders, mechanisms/activities, resources/capabilities, and impact. The following steps were used in the process of defining the dictionaries:

a. We start with the seminal keywords identified in the literature review (169 terms).
b. Seminal words were compared with the most frequent unigrams, bigrams and trigrams available in the text. To do this, we applied a semantic similarity of >0.8, which identified 133 additional terms, resulting in a complete expert-term dictionary of 302 entries.
c. Using this expert-term dictionary we identified all n-grams that contain any of these expert terms. This exercise resulted in more than 15K n-grams including unigrams (single words), bigrams (two words) and trigrams (three words).
d. We then identified the most frequent bigrams (occurrence higher than 4), trigrams (>4), and single words (>50) that contain the seed terms resulting in an initial list of 3,456 candidate terms (including the seminal term). This list underwent an initial manual review and filtering by one of the authors, eliminating redundant terms, lemmatised variations, and self-contained phrases. The refined list comprised approximately 2,000 terms.
e. Subsequently, a term classification and validation process based on a hand-coding method (Grimmer et al., 2022, chap. 18.2) was applied iteratively. Following an initial pilot review and discussion by the author team, which served as training, the categories were refined and the terms explored. Two authors then independently classified the complete list of terms. In cases of disagreement, a third author acted as adjudicator. This iterative process continued until consensus was reached and generic keywords that do not allow the classification of the n-gram in a single dictionary were removed to avoid overlaps . The final output was a validated set of four dictionaries (see Table 3), comprising 893 terms.

Phase 3 - Data analysis

The word clouds presented in Figure 3 provide a visual synthesis of the most frequent and salient terms used by universities in their KEF narrative statements, organised by the four analytical categories of this study (see annex II for detailed data). The visual prominence of terms such as *industry, SME, council, researcher* and *artist* in the stakeholders cloud (top left) highlights the central role of private sector actors, public authorities, and cultural institutions in the discourse on engagement. In the mechanisms and activities cloud (top right), dominant terms such as *board, award, hub, course, festival*, and *consultancy* reflect both formal governance structures and more operational activities of collaboration and outreach. The internal resources and capabilities cloud (bottom left) is marked by terms related to institutional support structures (*programme support, engagement team, funding, lab, innovation centre*), while the impact cloud (bottom right) emphasises socio-economic and environmental outcomes, with terms such as *growth, employment, regeneration, climate change*, and *social justice* standing out. Overall, these word clouds visually confirm key patterns identified through the dictionary-based analysis and provide an accessible entry point

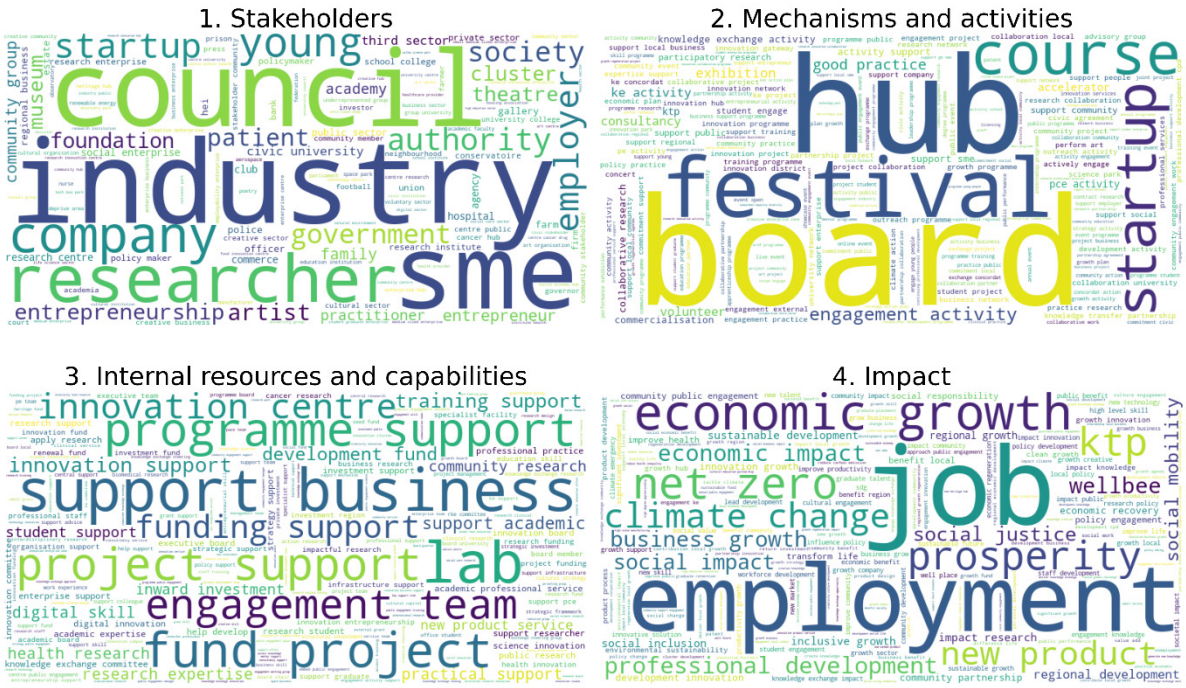
for understanding how universities articulate their narrative towards engagement at regional level.

Table 3. Four dictionaries with the number of terms

Dictionary and sub-categories		Num. of terms
1. Stakeholders		**154**
1.1	Academia and Research	32
1.2	Private Sector/Industry	34
1.3	Public Sector	19
1.4	Third Sector (TS)	69
1.4.1	TS: Civil Society and Community Groups	31
1.4.2	TS: Cultural and Creative	20
1.4.3	TS: Education and Skills	3
1.4.4	TS: Environmental	5
1.4.5	TS: Health and Social Care	10
2. Mechanisms and activities		**230**
2.1	Collaboration and networking	20
2.2	Collaborative Research	18
2.3	Consultancy and Advisory	19
2.4	Governance and commitments	37
2.5	Public and Community engagement	73
2.6	Training and Development	33
2.7	Transference and Commercialisation	30
3. Internal resources and capabilities		**259**
3.1	Funding mobilisation	35
3.2	Human Resources	55
3.3	Intellectual Property (IP) and Knowledge Assets	42
3.4	Organisational Structures and Governance	108
3.5	Physical and Digital Infrastructure	19
4. Impact		**250**
4.1	Capacity Building and Skills Impact	16
4.2	Cultural Impact	9
4.3	Economic Impact	70
4.4	Environmental Impact	20
4.5	Knowledge and innovation Impact	68
4.6	Policy and Public Service Impact	10
4.7	Societal Impact	57

The final step calculates the relative presence of each term across the 125 university statements. For each region and sub-category within the dictionaries, we compute a percentage that reflects its relative emphasis. This is done by dividing the number of occurrences of terms in a specific sub-category (e.g., "public sector" or "academia and research" stakeholders) by the total occurrences of all terms across the mission statements of universities in that region (e.g., the 15 universities in the North-West). These are then visualised in heatmaps, showing the relative prominence of each category across regions.

Figure 3. Word clouds of the most frequent terms by dictionary used in KEF narratives



Source: Authors' analysis based on dictionary-based text mining of KEF statements.

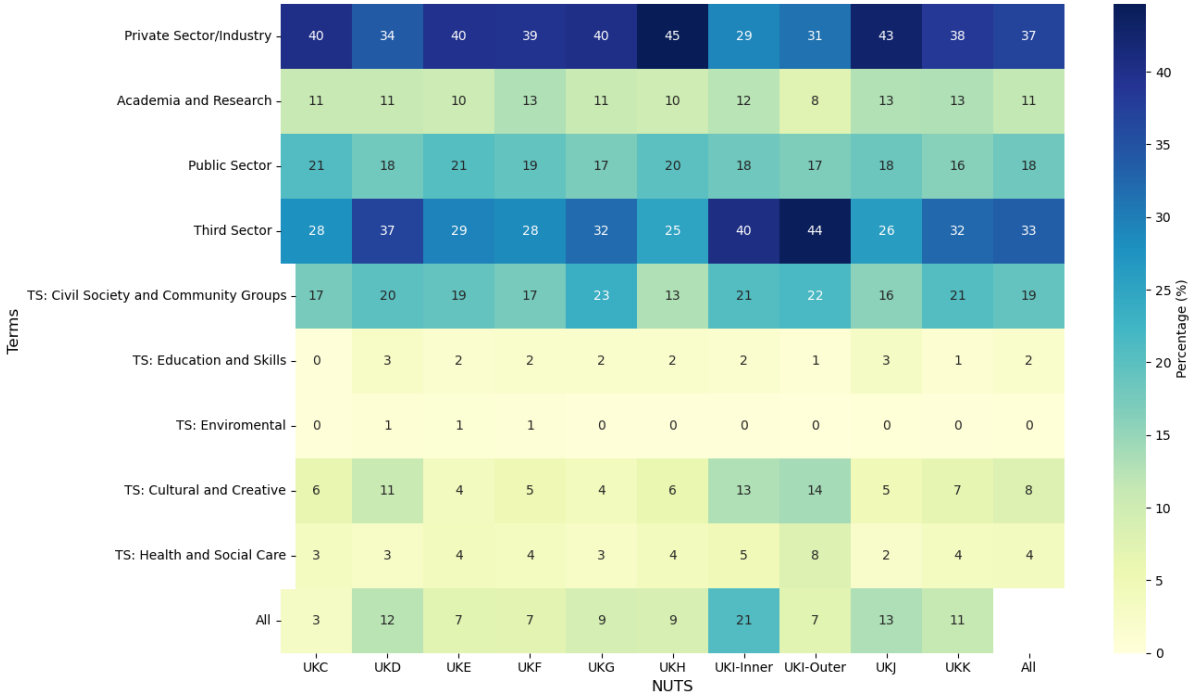
4 Findings

This section presents the key findings derived from each dictionary-based analysis and is structured in four parts identifying the key stakeholders, mechanisms/activities, resources/capabilities and impact highlighted in KEF statements by English HEIs.

4.1 Stakeholders involved in regional engagement

Figure 4 illustrates the relative frequency of terms associated with different stakeholder categories within the analysed documents, grouped by NUTS1 regions. The data reveal a consistent emphasis on private sector engagement, with associated terms accounting for over 37% of references across all regions and peaking at 45% in the East of England. Notably, the lowest percentages for the university-firm relationship appear in London (29% and 31% in Inner and Outer London, respectively), followed by the North West (34%). This engagement is proportionally larger outside these regions.

Figure 4. Heatmap of Stakeholder terms by NUTS1 region



Source: Authors' analysis based on dictionary-based text mining of KEF3 narrative statements.

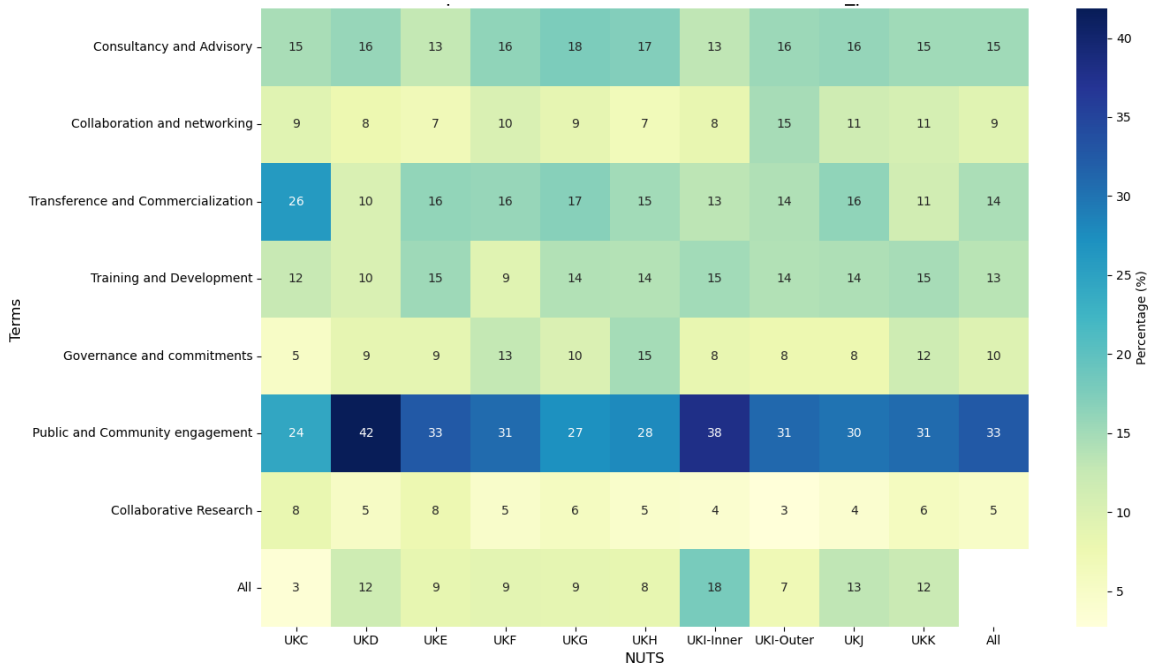
The third sector emerges as the second most frequently involved stakeholder in engagement, mentioned in 33% of statements. However, this category exhibits the most heterogeneity and significant regional variation. Within the third sector, the civil society and community groups is the most frequent sub-category, appearing in 19% of cases. Both Inner London and Outer London (13% and 14%, respectively), along with the North West (11%), notably demonstrate a higher emphasis on the engagement with the cultural and creative sector. Conversely, terms related to environmental stakeholders remain marginal across all territories, indicating that environmental sustainability currently holds a lower narrative priority within universities' KE strategies. This finding is particularly salient given increasing national and global policy expectations for universities to contribute to the Sustainable Development Goals (SDGs).

Public institutions and government are mentioned in approximately 18% of the mission statements, making them the third most frequent stakeholder with which universities engage, with no significant regional differences. Subsequently, other universities also feature in engagement, registering a more moderate and stable presence, typically ranging from 8% to 13%.

4.2 Mechanisms used in engagement activities

Figure 5 illustrates the primary KE mechanisms employed by universities within their regional engagement strategies. Public and Community Engagement clearly emerges as the most prominent category, accounting for 33% of references. Frequently associated terms include "festival," "engagement activity," "exhibition," and "volunteer." This strong emphasis reflects the evolving role of universities as civic actors, committed to contributing to cultural development, civic participation, and the strengthening of local social capital.

Figure 5. Heatmap of Mechanisms and Activities terms by NUTS1 region



Source: Authors' analysis based on dictionary-based text mining of KEF3 narrative statements.

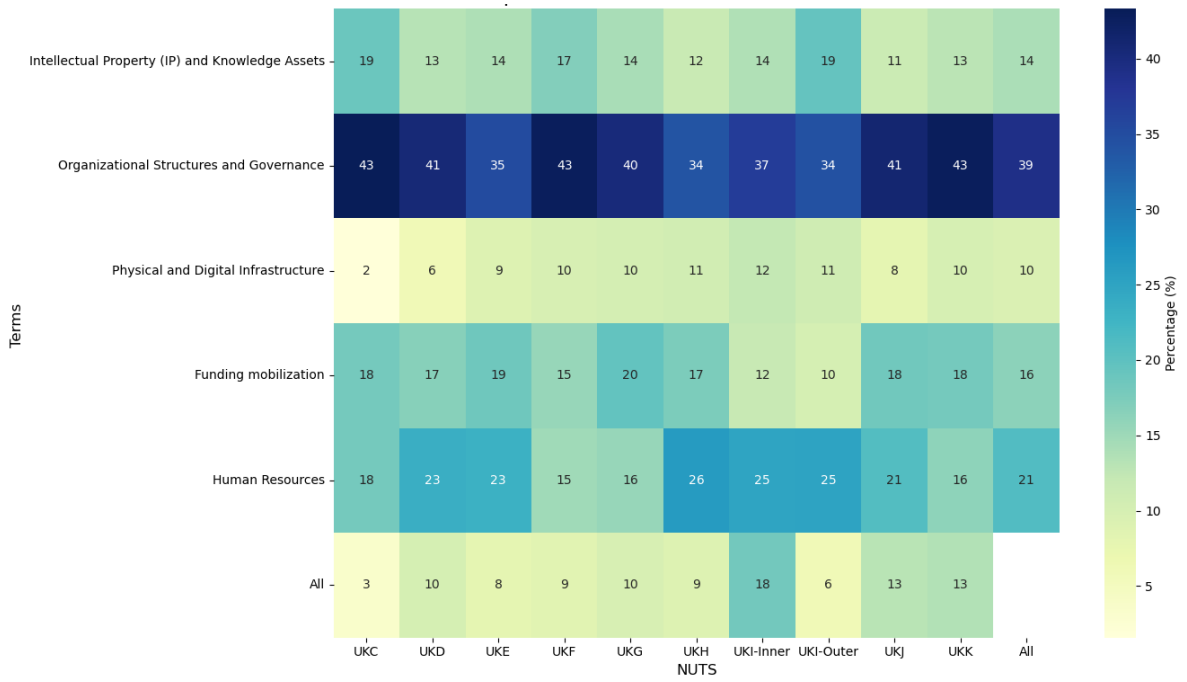
The second most frequently referenced group of activities includes Consultancy and Advisory (15%). This highlights the importance of informal activities, often captured via "soft indicators", and contrasts with the traditional emphasis on commercialisation (14%), which ranks third slightly ahead of Training and Development (13%). Regional emphasis on both these activities are evident across all types of regions, with the North East particularly prominent in transference and commercialisation (26%).

Meanwhile, categories such as Involvement in Governance and Commitments and Collaborative and Networking show a more balanced distribution across regions and a moderate presence in institutional documents. In contrast, Collaborative Research appears less frequently (5%), despite its potential importance in enhancing intersectoral connectivity and knowledge co-creation.

4.3 Availability of internal resources and capabilities

The heatmap in Figure 6 shows how terms related to Internal Resources and Capabilities are distributed across regions. Unsurprisingly, Organisational Structures and Governance dominates this landscape at 39%. This category accounts for over 34% of references in every region, peaking at 43% in the North East, East Midlands, and South West. Universities appear to place considerable importance on the formal structures such as boards, steering committees, and dedicated innovation and engagement teams that provide the institutional backbone for KE.

Figure 6. Heatmap of Internal Resources and Capabilities terms by NUTS1 region



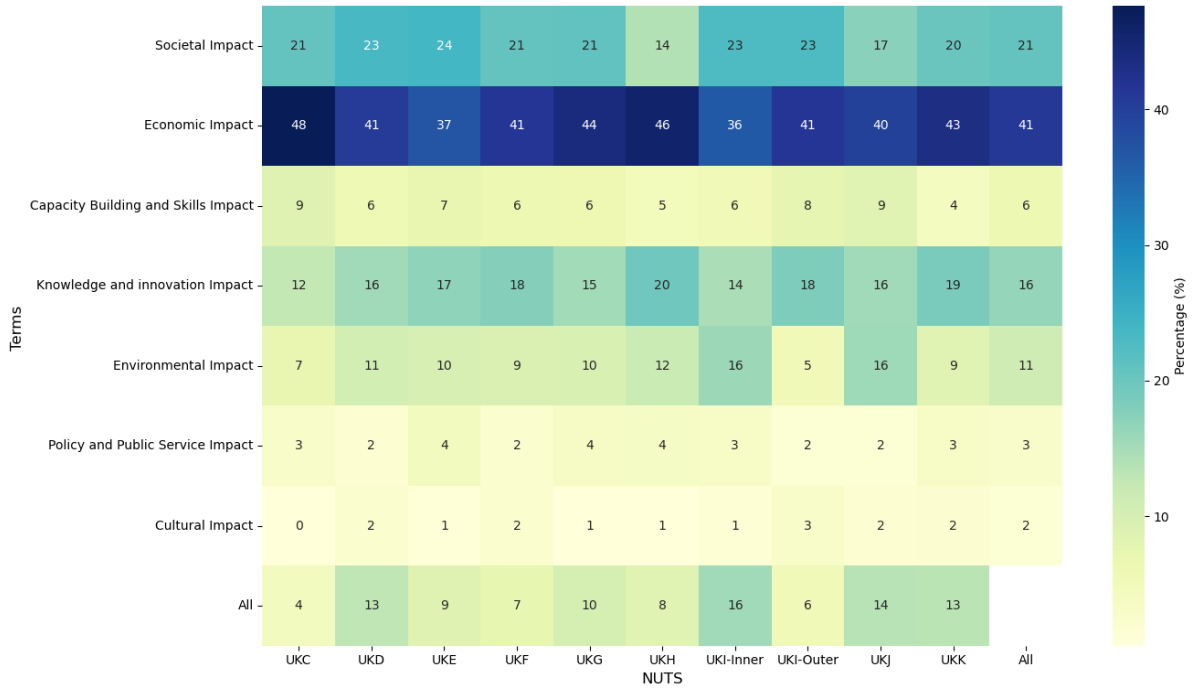
Source: Authors' analysis based on dictionary-based text mining of KEF3 narrative statements.

Human Resources represent the second most frequently mentioned category (21%), highlighting the importance of staff expertise, training support, and engagement teams. Funding Mobilisation follows (16%), reflecting references to project funds, inward investment and competitive innovation funding. IP and Knowledge Assets are cited 14% of statements, while Physical and Digital Infrastructure occupies a smaller share (10%). The relatively limited presence of terms such as "lab", "innovation centre", "knowledge quarter" or "specialist facility" may indicate underdeveloped capacities in these areas.

4.4 Impact

The heatmap in Figure 7 illustrates the dominant categories of impact across all NUTS1 regions. Economic Impact is overwhelmingly prevalent; terms such as "job", "employment", "economic growth" and "business growth" account for about 41% of all mentions in every NUTS1 territory, peaking at 48% in the North East. This suggests that universities continue to frame their contributions to regional development primarily through economic outcomes, solidifying their role as engines of growth and competitiveness, consistent with national policy narratives.

Figure 7. Heatmap of Impact terms by NUTS1 region



Source: Authors' analysis based on dictionary-based text mining of KEF3 narrative statements.

Societal Impact emerges as the second most prominent category, with mentions ranging from 14% (East of England) to 24% (Yorkshire and the Humber). Terms such as "*social justice*", "*social inclusion*", "*wellbeing*", and "*community partnership*" reflect universities' growing focus on broader societal goals. Knowledge and Innovation Impact ranks third at 16%, showing no pronounced regional differences. Environmental Impact shows more contrast, with universities in Inner London and the South East reporting higher emphasis (16%) compared to Outer London, where it appears in only 5% of statements.

Other impact dimensions—Capacity Building and Skills Impact, Policy and Public Service Impact, and Cultural Impact—receive comparatively less emphasis. The lower visibility of terms related to climate change, policy engagement, or cultural engagement suggests that, while these impacts are present, they have not yet achieved comparable narrative prominence.

5 Conclusions and recommendations

5.1 Main Conclusions

This report pursued two interconnected objectives: first, to review recent academic discourse on universities' regional engagement, including their roles, stakeholders, mechanisms, resources, and impacts; and second, to analyse how English universities present these dimensions in their strategies and capabilities. Specifically we used a systematic text-mining approach to KEF narratives to: 1) identify the most frequently emphasized narrative dimensions in university KE activities across regions; 2) determine which stakeholders and engagement

mechanisms are most consistently referenced; 3) examine how universities describe their internal resources and capabilities in support of KE, noting areas of strength and under-representation; 4) assess the extent to which narratives include economic and non-economic forms of impact, such as environmental, cultural, and policy contributions, and 5) explore significant regional divergences in KE narratives.

This methodological approach offers a novel contribution by enabling nuanced analysis of qualitative content, revealing patterns and variations in how universities construct their engagement narratives—insights less visible through quantitative metrics alone. These findings inform the usefulness of the current KEF exercise and highlight areas for improvement, advocating a shift away from uniform, "one-size-fits-all" approaches toward place-sensitive strategies that complement existing data sources for a holistic picture of the sector. This method can also be used in other Research England exercises where the information is structured similarly (e.g. REF Impact cases).

The empirical analysis revealed distinct patterns across the four dimensions examined. For stakeholders, private sector engagement dominated, followed by the third sector, with notable regional variation—particularly for the cultural sector. Environmental stakeholders appear only marginally in KEF despite growing policy expectations. In terms of mechanisms, public and community engagement activities is the most prominent category across all regions when both Engagement and Growth statements are considered, reflecting a sector-wide commitment to civic roles. Consultancy and advisory, along with transference and commercialisation, also feature prominently, highlighting the coexistence of informal, soft mechanisms with entrepreneurship and hard commercial outputs. Collaborative research, by contrast, appears less frequently. However, when focusing on Growth statements alone, a more traditional model of the entrepreneurial university emerges, centred on transference and commercialisation. Regarding internal resources and capabilities, organisational structures and governance dominate the narratives, signalling a widespread emphasis on formal structures for KE. Human resources, funding mobilisation and IP and knowledge assets are also consistently identified as significant areas of emphasis across regions. Finally, the analysis of impact reveals a strong dominance of economic impact across all regions, with societal impact consistently appearing as the second most prominent category. Other impact dimensions—specifically capacity building and skills, policy and public service, and cultural contributions—receive comparatively less narrative emphasis.

Despite these overarching commonalities, some regional specificities emerged. In stakeholder engagement, the lowest percentages in the university-firm relationship were observed in London and the North West, while these same regions, demonstrated a higher emphasis on cultural and creative engagement. Pertaining to engagement mechanisms, the North East notably distinguished itself with a higher emphasis on transference and commercialisation. In terms of internal resources, while organisational structures and governance was broadly prominent, its peak narrative was found in the North East, East Midlands, and South West, and regions outside London more frequently highlight the importance of funding mobilisation.

Regarding impact, the peak of economic impact was recorded in the North East, and the emphasis on societal impact varied. Finally, a notable difference in reported environmental

impact emerges, with universities in Inner London and the South East reporting significantly more on this compared to Outer London. These regional variations underscore the importance of place-sensitive policy considerations in fostering diverse and effective KE ecosystems.

5.2 Challenges identified and avenues for improvement

Results presented here suggest that there are still persistent challenges in the identification of regional KE activities that require several critical avenues for improvement.

First, due to the specific methodological approach used, narratives mainly identify commonalities in how universities present their regional engagement. However, statements only vaguely reflect existing differences across regions and how universities tailor their strategies to tackle local needs. This would require moving beyond generic statements of impact to explain how universities are responding to their region's unique absorptive capacity challenges (Bonaccorsi, 2017) or actively working to counteract brain drain (Kempton et al., 2021). Some universities already adopting this approach—for example, the University of Manchester emphasises its use of theory of change and portfolio management models to describe the mechanisms for managing and measuring engagement success. But more can be done. For instance, a university in a peripheral region might detail specific initiatives aimed at fostering graduate retention through local employment pathways, or a university operating within a fragmented governance landscape might describe bespoke collaborative frameworks established to overcome such systemic barriers (Ulrichsen, 2021).

Second, narratives tend to emphasise achievements without much reflection on the complex internal and external challenges they face in regional engagement. Current narratives often overlook tensions between teaching, research and regional engagement, the latter often perceived as less academically rigorous and therefore deprioritised in favour of activities that enhance global reputation (Martin, 2012). University statements should articulate how they are actively addressing internal policies and incentive schemes that reward engagement or community-focused initiatives alongside traditional academic outputs (Kempton et al., 2021; Trencher et al., 2014).

Furthermore, narratives could detail specific efforts to overcome resource constraints within critical mechanisms like TTOs (Arora et al., 2020) and how they are navigating the challenges of responding to global challenges while meeting regional needs (Bonaccorsi, 2017). To offer a more complete portrayal of university engagement, it is important to recognise informal academic contributions to regional development, which currently remain hidden in academic's CVs and largely unrewarded (Benneworth et al., 2017; Perkmann et al., 2021). KEF narratives could highlight specific examples of exemplary practice rather than relying on broad descriptions. For example, narratives could showcase institutions that have effectively developed innovative incentive systems to value regional engagement alongside traditional academic outputs, or those that have successfully aligned global research strengths with local industrial needs (Rodríguez-Pose and Wang, 2025).

Third, there is a fundamental tension in aligning evaluation frameworks with the multifaceted institutional missions of universities (Henderson et al., 2024), raising critical questions around

existing metrics (Plummer et al., 2021). Persistent gaps remain in both the conceptual development of indicators and the systematic collection of comprehensive data capturing regional engagement. The absence of robust, fit-for-purpose metrics creates significant systemic barriers (Kelleher and Ulrichsen, 2024). At the policy level, this complicates funding allocations for university-led regional growth, while at the institutional level it hinders universities' capacity to evaluate the effectiveness of their strategies. Most critically, this measurement gap stifles organisational learning, limiting universities' ability to iteratively refine and enhance their regional engagement approaches. We propose that KEF should aim to foster institutional learning and self-reflection, focusing on long term outcomes rather than immediate outputs (e.g. evidence of concrete actions such as forming committees, adopting policies that favour engagement, or providing staff training).

Data collected in surveys like HEBCI or indicators in the KEF has provided robust quantitative datasets useful for organisations accountability. Future research should embrace a longitudinal analytical approach, combining qualitative narrative analysis with quantitative data integration. As KEF data is collected periodically, replicating this text-mining analysis over time offers a unique opportunity to track discursive shifts and trends in university engagement. This mixed-method approach would allow for the validation of narrative claims against tangible activity data, identify discrepancies between articulated ambition and delivered outcomes, and provide a more comprehensive picture of universities' evolving regional contributions. Even if the analysis of university reports is decoupled from direct funding accountability, its utility remains significant, primarily by addressing the systemic barriers outlined in the current evaluation landscape. At the university level, this qualitative exercise offers a critical mechanism for organisational learning by directly addressing the "measurement gap" that hinders iterative improvement and by identifying discrepancies between strategic mission and actual outcomes. At the regional level, the analysis can deepen understanding of mission-oriented challenges and strengthen place-based approaches, helping to align strategies with regional priorities and needs.

Finally, narratives reflect on different stakeholders involved in engagement activities, but lack information on the connection between them, specifically those integrated within broader innovation ecosystem. There is a clear opportunity for narratives to showcase collaboration with a wider array of actors beyond traditional business and public sector partners, including e.g. further education colleges. By working with a wide range of partners, universities can enhance regional co creation and respond to complex socio economic challenges. Demonstrating integrated, multi actor approaches would better illustrate how to move beyond a solely university-centric view to one that embraces the collective strength of regional assets.

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Annex I: Structure of the KEF3 Narrative Templates

Sections	Questions
Public and Community Engagement	
Strategy	How have you ensured that the P&CE work of your institution is purposeful, well supported and adequately resourced? What has informed your approach, and how is it governed and led?
Support	What practical support have you put in place to support public and community engagement and recognise the work appropriately? How open and responsive have you been to the needs and interests of your communities, and to the co-creation of knowledge?
Activity	What are some of the key programmes of activity that you have undertaken which best illustrate your approach to P&CE and the outcomes you are achieving? How do these relate back to your strategic goals?
Enhancing practice	How have you organised and supported evaluation of your P&CE activity, to improve the experience of publics and communities and to help staff and students to develop their practical expertise? Have you chosen to develop an institution-wide approach to monitoring and evaluating the quality of your engagement activities? Have you provided support to individuals and teams to help them with evaluation? Have you provided tools and approaches to encourage staff and students to reflect on their practice, and training and support for staff to apply these? How do you collect and share the evidence you gather to improve the experience of publics and communities, and to help you develop better and more effective engagement activity?
Building on success	How effectively have you realised your strategic goals and ambitions for Public and Community Engagement? Have you evaluated the effectiveness of the support you offer? How have you gone about monitoring and sharing your progress – for instance, how and to whom do you report on your progress, inside and outside your institution? How have you involved your communities in this scrutiny of your strategic approach? How have you used this learning about 'what is working' (and what isn't) to inform and improve your strategic approach and the support you offer to staff, students and communities?
Local growth and regeneration	
Strategy	Information on your strategic approach to local growth and regeneration as a means to understand your intended achievements.
Activity	Information on the focus of your approach and the activities delivered. How do you know it met the identified needs of the geographic areas you identified? Please focus on the last three years of activity (2021-22, 2020-21 and 2019-20).
Results	Describe the outcomes and/or impacts of your activity. How do you communicate and act on the results?

Annex II: Dictionary terms

Stakeholders

Category	List of terms found	Terms	Occurs.	% in group
Academia and Research	researcher(564), civic university(121), research centre(99), hei(76), research enterprise(58), research institute(51), university college(36), academia(33), group university(14), academic faculty(13), centre research(12), education institution(12), research innovation enterprise(12), centre university(11), university council(11), university group(11), discovery park(10), university centre(10), research institution(8), centre ethnic health(7), food innovation centre(6), research innovation centre(5), russell group(5), high education sector(4), research innovation hub(4), valley science park(3), research organisation(2), research intensive institution(1)	28	1199	**11.49%**
Private Sector/Industry	industry(816), sme(662), company(486), startup(365), employer(333), entrepreneurship(183), cluster(161), entrepreneur(154), practitioner(127), commerce(89), regional business(73), bank(55), private sector(54), firm(53), investor(31), aerospace(22), space park(20), business enterprise(19), business sector(19), enterprise hub(18), enterprise centre(16), employability enterprise(15), manufacturer(15), enterprise business(13), medium sized enterprise(9), small medium sized enterprise(9), technology centre(9), digital sector(8), medium enterprise(6), student graduate enterprise(6), tech box park(5), art humanity business(1)	32	3852	**36.92%**
Public Sector	council(680), authority(325), government(262), agency(105), public sector(78), officer(72), police(72), estate(71), policy maker(57), policymaker(52), centre public(32), governor(31), court(28), parliament(15), industry public(10), minister(10), government department agency(2), public organization(1)	18	1903	**18.24%**
Third Sector (TS)	All	67	3478	**33.34%**
TS: Civil Society and Community Groups	young(395), society(262), foundation(176), community group(146), family(144), third sector(115), social enterprise(105), club(90), farm(81), union(54), farmer(37), football(36), press(36), community member(35), community stakeholder(35), neighbourhood(30), prison(30), stakeholder community(25), underrepresented group(25), voluntary sector(25), federation(19), deprive area(16), community sector(15), observatory(13), civic stakeholder(11), housing association(11), community hub(9), civic institution(8), community centre(7), social economy hub(6)	30	1997	19.14%
TS:Cultural and Creative	artist(185), museum(166), theatre(157), gallery(71), conservatoire(46), creative sector(36), cultural sector(28), creative business(27), cultural organisation(23), art organisation(18), creative enterprise(18), poetry(14), creative community(12), heritage hub(12), cultural institution(9), art centre(8), art sector(8), creative hub(7), centre contemporary art(2)	19	847	8.12%
TS: Education and Skills	academy(126), school college(57), school institute(9)	3	192	1.84%
TS: Enviromental	renewable energy(17), natural environment(9), national park(7), life science sector(5), centre climate change(4)	5	42	0.40%
TS: Health and Social Care	patient(204), hospital(96), cancer hub(35), nurse(17), health sector(11), institute health(11), health provider(8), healthcare provider(7), centre cancer drug(6), social care sector(5)	10	400	3.83%

Mechanisms and activities

Category	List of terms found	Terms	Occurs.	% in group
Collaboration and networking	hub(430), collaborative project(42), project collaboration(23), partnership project(20), business network(19), innovation network(18), collaborative work(15), partnership collaboration(15), collaborative partnership(14), joint project(13), partnership activity(13), network partnership(10), local network(9), network business(8), anchor network(7), health science network(4), network event(2), project collaborative(2)	18	664	**9.39%**
Collaborative Research	collaborative research(77), participatory research(61), research collaboration(43), innovation hub(38), collaboration local(25), collaboration university(21), research network(21), collaboration partner(14), programme research(13), collaboration business(10), collaboration regional(10), collaboration third sector(6), citizen science project(5), innovation collaboration programme(5), research innovation activity(4), research collaborative(1)	16	354	**5.00%**
Consultancy and Advisory	board(548), consultancy(142), support sme(87), activity support(73), support regional(39), advisory group(36), support local business(26), support company(23), expertise support(21), professional services(18), support entrepreneur(16), support employer(15), business project(10), support gm sme(7), support local regional(7), support local sme(7), support local national(4)	17	1079	**15.25%**
Governance and commitments	ke activity(149), knowledge exchange activity(83), civic agreement(31), ke concordat(31), ke project(30), policy practice(29), climate action(22), economic plan(19), university network(19), commitment support(18), concordat action(17), exchange project(17), commitment public(16), exchange concordat(16), exchange programme(14), growth plan(14), strategy activity(13), support network(13), commitment civic(12), commitment local(12), plan growth(12), creative enterprise zone(10), partnership agreement(10), enterprise committee(9), erdf programme(9), annual programme(8), commitment social(8), commitment equality diversity(7), growth regeneration agenda(7), kec action plan(7), strategy action plan(7), new strategic plan(5), strategic action plan(5), regional economic strategy(4), collaboration knowledge exchange(2), ethic committee(2)	36	687	**9.71%**
Public and Community engagement	festival(397), engagement activity(341), exhibition(179), volunteer(155), pce activity(106), support public(66), support community(63), student engage(54), engagement project(46), public event(46), pe activity(44), perform art(40), community project(37), engagement practice(36), community event(35), outreach activity(34), actively engage(31), concert(27), support social(27), community practice(26), programme public(22), support people(21), engagement external(20), support local community(20), community engagement work(19), outreach programme(19), community activity(18), event open(16), activity engagement(15), activity public(15), annual event(15), collaboration community(15), practice public(15), support young(15), public performance(14), public programme(14), engage young people(13), activity community(12), live event(12), online event(12), performance exhibition(12), public engagement event(12), civic activity(11), community programme(11), event programme(11), programme community(11), showcase event(11), community action(10), community education(9), engagement public community(9), nccpe engage(9), project community(9), public involvement engagement(9), art project(8), community engagement event(8), community engagement research(8), activity local community(7), clinical practice(7), community engagement programme(7), engagement action(7), engagement industry(7), programme young people(5), connected community(2)	63	2312	**32.68%**
Training and Development	course(393), good practice(217), training programme(36), development activity(25), practice research(19), professional development cpd(18), support training(18), student project(17), degree programme(16), skill programme(15), programme training(14), apprenticeship programme(13), education programme(12), project student(12), education partner(11), leadership programme(11), training event(11), internship programme(10), programme student(10), researcher development programme(10), activity school(9), continuing professional development(9), professional service support(9), mentor programme(7), support student graduate(7), support student enterprise(6), learn programme(5), student enterprise programme(5), research professional practice(4), professional development opportunity(3), student placement internship(3)	31	955	**13.50%**
Transference and Commercialization	startup(365), accelerator(116), ktp(104), commercialisation(72), knowledge transfer partnership(34), growth programme(29), innovation programme(29), innovation project(27), science park(25), innovation district(21), innovation gateway(20), support enterprise(18), business support programme(17), entrepreneurial activity(14), innovation park(14), contract research(13), innovation services(13), activity business(12), growth activity(12), patent(11), project business(11), business support activity(8), licensing(8), commercial activity(6), growth regeneration project(6), research innovation collaboration(5), energy network demonstrator(4), spinoff(4), technology park(4), research enterprise service(2)	30	1024	**14.47%**

Internal resources and capabilities

Category	List of terms found	Terms	Occurs.	% in group
Funding mobilization	fund project(89), funding support(59), development fund(51), inward investment(38), investment support(29), investment region(21), research funding(21), project funding(20), renewal fund(20), innovation fund(19), investment fund(19), grant support(17), strategic investment(17), support fund(17), research fund(16), seed fund(16), structural investment(15), private investment(14), innovation funding(13), funding project(11), social fund(11), external grant(10), heritage fund(10), small grant(10), investment public(8), new investment(8), externally fund research(7), knowledge exchange funding(7), research england funding(7), grant research england(4), connect capability fund(2)	31	606	**16.28%**
Human Resources	training support(53), support academic(44), research expertise(43), digital skill(41), practical support(40), student support(36), research student(32), academic expertise(30), professional practice(26), support researcher(26), innovation entrepreneurship(24), professional staff(20), education skill(19), support graduate(19), specialist support(18), support advice(18), work experience(18), support skill(17), professional support(16), support colleague(14), entrepreneurial skill(13), business skill(12), cultural capital(12), research staff(12), staff training(12), access training(11), technical support(11), creative learning(10), expertise resource(10), researcher professional(10), public engagement manager(9), research training(9), creativity innovation(8), mentor support(8), support career(8), creative skill(7), knowledge exchange manager(7), community engagement manager(6), engagement skill(6), public engagement training(6), business development manager(5), green skill(5), professional service manager(5), programme support student(5), public engagement staff(5), knowledge exchange staff(4), professional service colleague(4), research development capability(4), innovation capability(3), knowledge exchange student(2), scientific expertise(1)	51	784	**21.06%**
Intellectual Property (IP) and Knowledge Assets	health research(40), community research(37), new product service(36), apply research(33), science innovation(32), digital innovation(28), public research(26), health innovation(21), business research(20), impactful research(20), cancer research(19), clinical research(18), knowledge exchange research(17), action research(16), biomedical research(14), interdisciplinary research(14), research clinical(12), research design(11), knowledge exchange innovation(10), access knowledge(9), international research(8), social innovation(8), technology innovation(8), translational research(8), datum research(6), research technology(6), london food innovation(5), public engagement science(5), service research(5), social care research(5), social science research(5), climate change innovation(4), creative performing(4), internationally excellent research(4), research address local(3), challenge research(2), humanity research(1)	37	520	**13.97%**
Organizational Structures and Governance	support business(135), programme support(83), project support(75), engagement team(65), innovation support(58), academic professional service(35), executive board(30), strategy support(30), enterprise support(28), research support(27), innovation board(26), innovation committee(26), knowledge exchange committee(26), help develop(25), academic board(22), board member(21), executive team(21), support pce(21), organisation support(20), infrastructure support(18), strategic support(18), cultural strategy(17), policy support(17), project management(17), strategic framework(17), help support(16), project team(15), support team(15), board university(14), central support(14), pe team(14), programme board(14), rke committee(14), entrepreneurship support(13), ke support(13), board chair(12), clinical service(12), embed public engagement(12), innovation cluster(12), central research(11), education support(11), exchange steering group(11), governance group(11), ke committee(11), knowledge exchange steering(11), research committee(11), service team(11), support mechanism(11), board local(10), consultancy service(10), engagement activity support(10), enterprise team(10), growth board(10), management team(10), pace team(10), public engagement network(10), board governor(9), community service(9), innovation audit(9), innovation service(9), support office(9), community engagement support(8), economic board(8), executive group(8), support inclusive growth(8), communication team(7), programme public engagement(7), consultancy support(6), economic development team(6), engagement working group(6), innovation business support(6), knowledge exchange team(6), pce steering group(6), research service(6), strategy public engagement(6), business development team(5), committee knowledge exchange(5), directorate research innovation(5), faculty professional service(5), kei integrated service(5), key support role(5), knowledge exchange approach(5), pe working group(5), research innovation office(5), career service(4), industry advisory board(4), professional service department(4), research enterprise committee(4), community advisory board(3), ke working group(3), knowledge exchange engagement(3), exchange working group(1), research ethic committee(1)	93	1458	**39.17%**
Physical and Digital Infrastructure	lab(129), innovation centre(64), specialist facility(19), centre public engagement(18), support infrastructure(18), office student(15), innovation campus(12), knowledge quarter(12), science innovation park(10), advice centre(9), innovation studio(9), research park(9), innovation enterprise zone(8), space business(7), public engagement space(5), centre health innovation(3), digital innovation farm(3), research infrastructure(3), knowledge exchange infrastructure(1)	19	354	**9.51%**

Impact

Category	List of terms found	Terms	Occurs.	% in group
Capacity Building and Skills Impact	professional development(87), high level skill(25), new skill(23), staff development(21), workforce development(21), student engagement(20), graduate talent(18), new talent(18), development cpd(12), personal development(11), graduate placement(10), graduate retention(10), growth skill(8), engagement local school(5), high degree apprenticeship(4), local skill improvement(1)	16	294	**6.24%**
Cultural Impact	cultural engagement(21), public performance(14), culture engagement(13), cultural education partnership(7), new heritage hub(5), creativity culture development(4), enrich life culture(4), cultural economic life(3), cultural economic development(2)	9	73	**1.55%**
Economic Impact	job(376), employment(271), economic growth(173), prosperity(110), economic impact(83), business growth(77), regional development(54), inclusive growth(49), regional growth(43), economic recovery(38), growth hub(28), economic benefit(23), growth company(22), lead development(21), growth local(20), growth sector(20), grow business(19), improve productivity(19), economic regeneration(18), growth creative(17), significant investment(17), business grow(16), growth support(16), productivity growth(16), growth business(15), growth fund(15), growth productivity(15), contribution local growth(14), development business(14), return investment(14), sme growth(14), impact local growth(13), value add(13), business benefit(12), growth region(12), regional economic development(12), support local economy(12), contribute local growth(11), growth agenda(11), growth strategy(11), regeneration development(11), significant growth(11), development corporation(10), development growth(10), growth uk(10), deliver local growth(9), regional growth regeneration(9), unemployment(9), positive economic(8), regeneration local growth(8), growth economic(7), local economic development(7), sustainable economy(7), engagement local business(6), high value manufacturing(6), support local economic(6), growth aspect(5), growth regeneration impact(5), relationship local business(5), boost productivity(4), economic development regeneration(4), economic societal benefit(4), growth deal funding(4), life science business(4), design growth enterprise(3), enterprise business development(3), inclusive sustainable economic(3), revenue growth(2)	68	1934	**41.06%**
Environmental Impact	net zero(131), climate change(96), sustainable development(51), environmental sustainability(30), environmental sustainability(30), clean growth(29), sdg(25), climate emergency(24), sustainable growth(20), sustainable future(16), environmental impact(13), tackle climate(11), impact climate(10), sustainable food(10), reduce carbon emission(9), sustainable inclusive growth(9), low carbon product(6), sustainable advanced manufacturing(4), sustainable economic growth(4)	18	528	**11.21%**
Knowledge and innovation Impact	ktp(104), new product(88), impact research(51), innovation growth(38), development innovation(37), impact knowledge(29), growth innovation(28), product development(28), engagement knowledge(24), new technology(24), knowledge exchange impact(23), new market(20), impact innovation(18), innovative solution(18), product process(17), engagement innovation(14), engagement ke(14), product design(12), patent(11), new creative(10), cluster development(9), innovative business(9), partnership innovation(9), engage knowledge exchange(8), create knowledge(7), knowledge exchange community(7), create new knowledge(6), deliver knowledge exchange(6), development knowledge(6), high education innovation(6), innovative product service(6), knowledge creation(6), new idea(6), new idea(6), enable innovation(5), innovation business growth(5), creation knowledge(4), engagement research innovation(4), engagement research knowledge(4), facilitate knowledge exchange(4), generate new knowledge(4), growth knowledge exchange(4), knowledge exchange opportunity(4), knowledge exchange work(4), develop knowledge exchange(3), inform knowledge exchange(3), knowledge co creation(3), new knowledge exchange(3), economy knowledge exchange(2), life science innovation(2), enable knowledge exchange(1), enhance knowledge exchange(1), knowledge create(1), knowledge dissemination(1), knowledge exchange business(1), knowledge generation(1), partner deliver innovative(1), quality knowledge exchange(1), underpin knowledge exchange(1), wide knowledge exchange(1)	59	773	**16.41%**
Policy and Public Service Impact	policy engagement(32), policy development(19), influence policy(17), research policy(17), local policy(15), policy change(11), partnership local authority(9), governance public engagement(5), policy making(5), policy influence(2)	10	132	**2.80%**
Societal Impact	wellbee(77), social impact(72), social justice(61), social mobility(54), social inclusion(50), community partnership(35), community public engagement(35), benefit local(34), improve health(34), transform life(33), social responsibility(31), well place(25), social value(23), societal impact(23), impact public(22), improve life(21), impact community(20), community development(19), benefit region(17), public benefit(17), community impact(16), improve community(16), approach public engagement(15), benefit community(15), social work(15), community benefit(13), social change(13), development community(12), difference life(11), improve public(10), social economic benefit(10), societal benefit(10), healthy life(9), impact local community(9), development health(8), change life(7), social development(7), annual public engagement(6), growth social(6), impact society(6), increase public engagement(6), social economic impact(6), civic community engagement(5), community support engagement(5), development enrich life(5), tackle global challenge(5), well future(5), benefit society(4), build strong community(4), reduce health inequality(4), social economic development(4), sustainability health wellbeing(3), positive difference society(1), social equity(1), social transformation(1)	55	976	**20.72%**

Annex III: List of Higher Education Institution included in the analysis

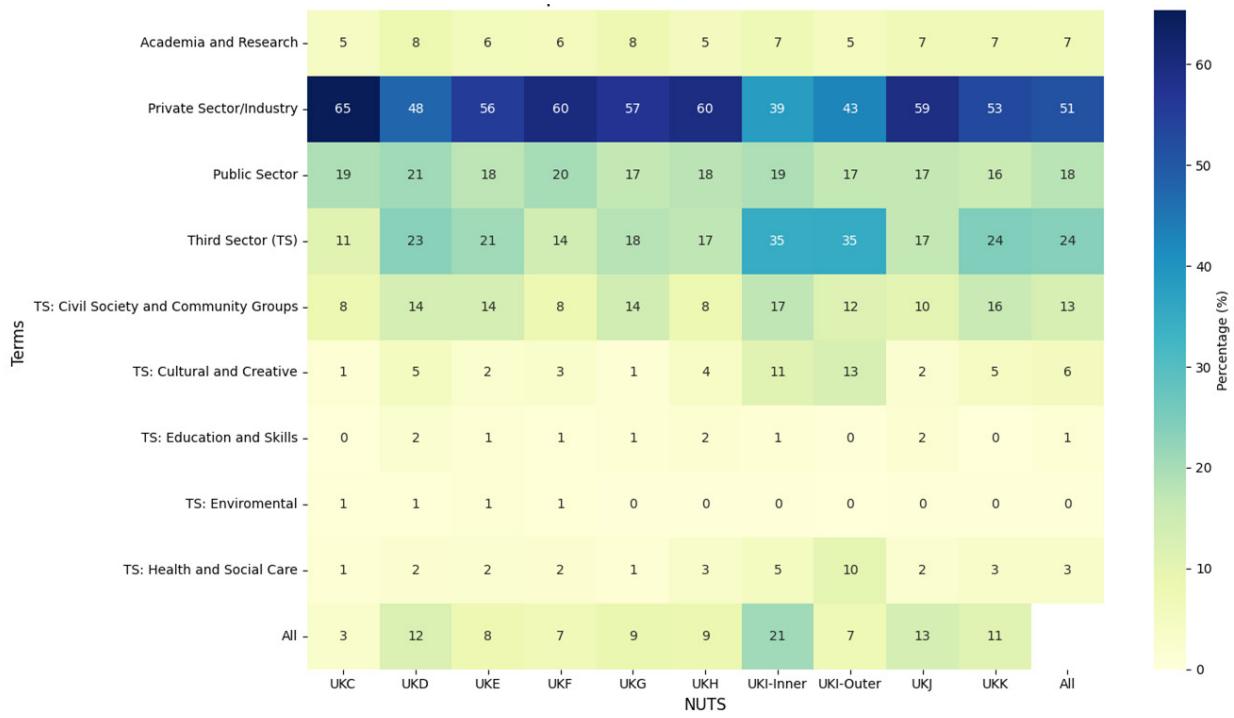
AECC University College
Anglia Ruskin University
Arts University Plymouth
Aston University
Bath Spa University
Birkbeck College
Birmingham City University
Bishop Grosseteste University College Lincoln
Bournemouth University
Brunel University
Buckinghamshire New University
Canterbury Christ Church University
Central School of Speech and Drama
Coventry University
Cranfield University
De Montfort University
Edge Hill University
Falmouth University
Goldsmiths College
Guildhall School of Music and Drama
Harper Adams University
Hartpury University
Imperial College of Science, Technology and Medicine
King's College London
Kingston University
Leeds Beckett University
Leeds Trinity University
Liverpool Hope University
Liverpool John Moores University
Liverpool School of Tropical Medicine
London Metropolitan University
London School of Economics and Political Science
London School of Hygiene and Tropical Medicine
London South Bank University
Loughborough University
Middlesex University
National Film and Television School
Newman University
Norwich University of the Arts
Oxford Brookes University
Queen Mary University of London
Roehampton University
Royal Agricultural University
Royal College of Art
Royal College of Music
Royal Holloway and Bedford New College
Royal Northern College of Music
Sheffield Hallam University
Southampton Solent University
St George's Hospital Medical School
St Mary's University, Twickenham
Staffordshire University
Teesside University
The Arts University Bournemouth
The City University
The Institute of Cancer Research
The Liverpool Institute for Performing Arts
The London Academy of Music and Dramatic Art
The Manchester Metropolitan University
The Nottingham Trent University
The Open University
The Place (London Contemporary Dance School)
The Royal Veterinary College
The School of Oriental and African Studies
The University of Bath
The University of Birmingham
The University of Bolton
The University of Bradford
The University of Brighton
The University of Bristol
The University of Cambridge
The University of Central Lancashire
The University of Chichester
The University of East Anglia
The University of East London
The University of Essex

The University of Exeter
The University of Greenwich
The University of Huddersfield
The University of Hull
The University of Keele
The University of Kent
The University of Lancaster
The University of Leeds
The University of Leicester
The University of Lincoln
The University of Liverpool
The University of Manchester
The University of Newcastle-upon-Tyne
The University of Northampton
The University of Oxford
The University of Portsmouth
The University of Reading
The University of Salford
The University of Sheffield
The University of Southampton
The University of Sunderland
The University of Surrey
The University of Sussex
The University of Warwick
The University of West London
The University of Westminster
The University of Winchester
The University of Wolverhampton
The University of York
Trinity Laban Conservatoire of Music and Dance
University Campus Suffolk
University College Birmingham
University College London
University of Bedfordshire
University of Chester
University of Cumbria
University of Derby
University of Durham
University of Gloucestershire
University of Hertfordshire
University of Northumbria at Newcastle
University of Nottingham
University of Plymouth
University of St Mark and St John
University of the Arts, London
University of the West of England, Bristol
University of Worcester
Writtle College
York St John University

Annex IV: Analysis of the Growth statement

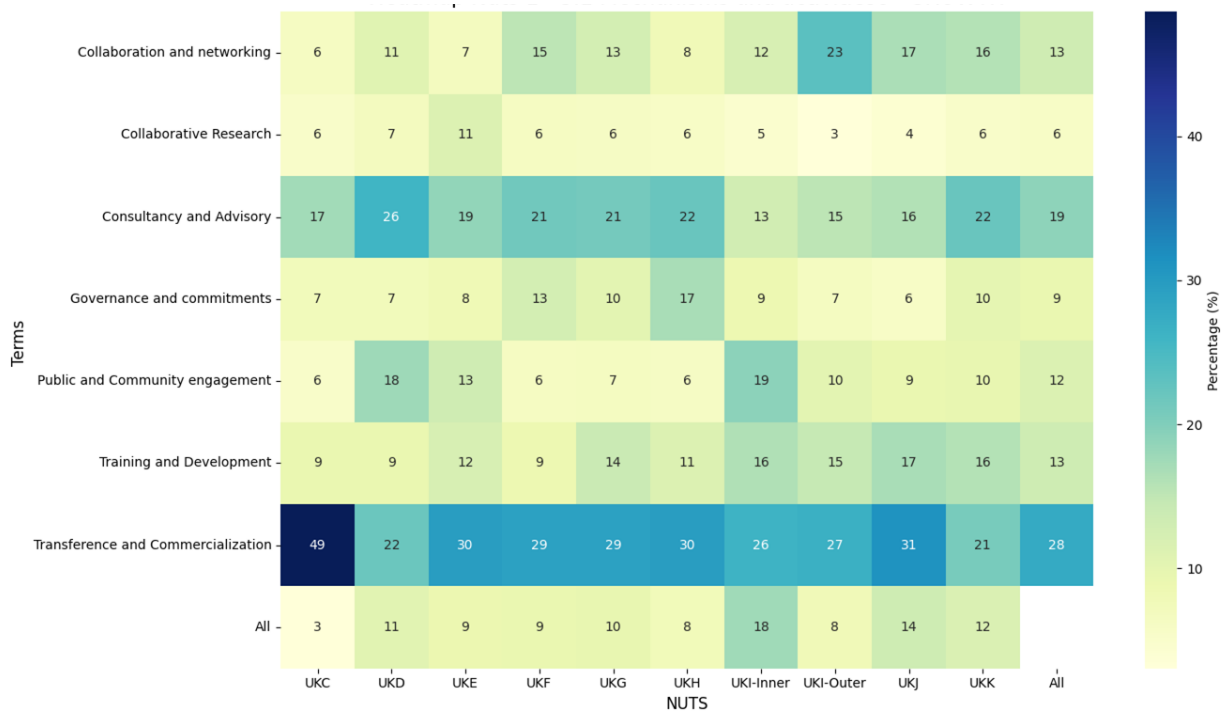
This section includes an analysis of the Growth statement only and compare the results with those presented in the main text. In terms of the stakeholders involved, private sector engagement remains at the core. This sector is reported by 51% of universities, an even higher proportion than when the Engagement statement is included in the main analysis. This is followed by collaboration with the third sector. Although lower than in the main results, almost one out of four universities report engaging with this sector, primarily via the civil society and community groups.

Figure A1.1 Heatmap of Stakeholder terms– Growth Statement



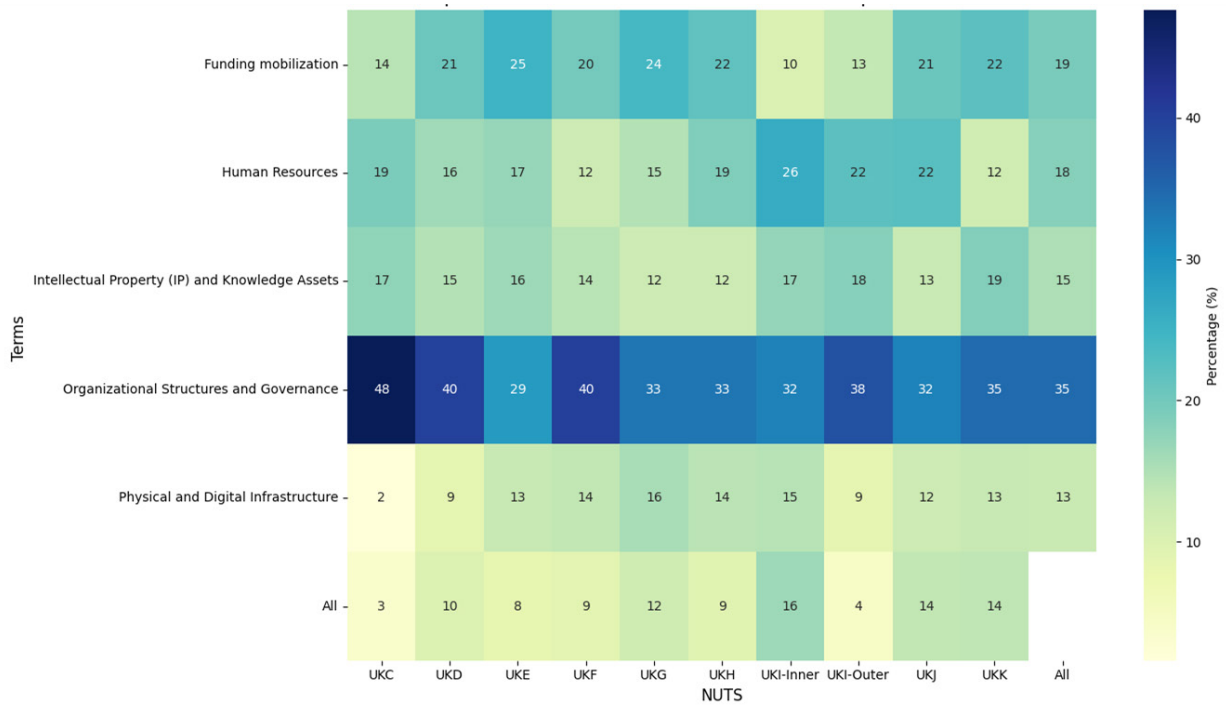
Focusing only on the Growth statements reveals a shift in the prioritization of the mechanisms and activities reported, as public and community engagement was a distinct and highly referenced category in the main results. In the data derived from the Growth statements, however, a more traditional entrepreneurial university model remains dominant, with transference and commercialisation reported as the main mechanisms by 28% of universities. This is followed by other softer engagement mechanisms such as consultancy and advisory (19%), collaboration and networking (13%), and training and development (13%). In this specific context, public and community engagement activities drop to the fourth most frequent option at 12%. This decrease is likely due to institutions avoiding repetition, assuming the details on community engagement would be reported elsewhere in the Engagement statement.

Figure A1.2 Heatmap of Mechanisms and Activities terms– Growth Statement



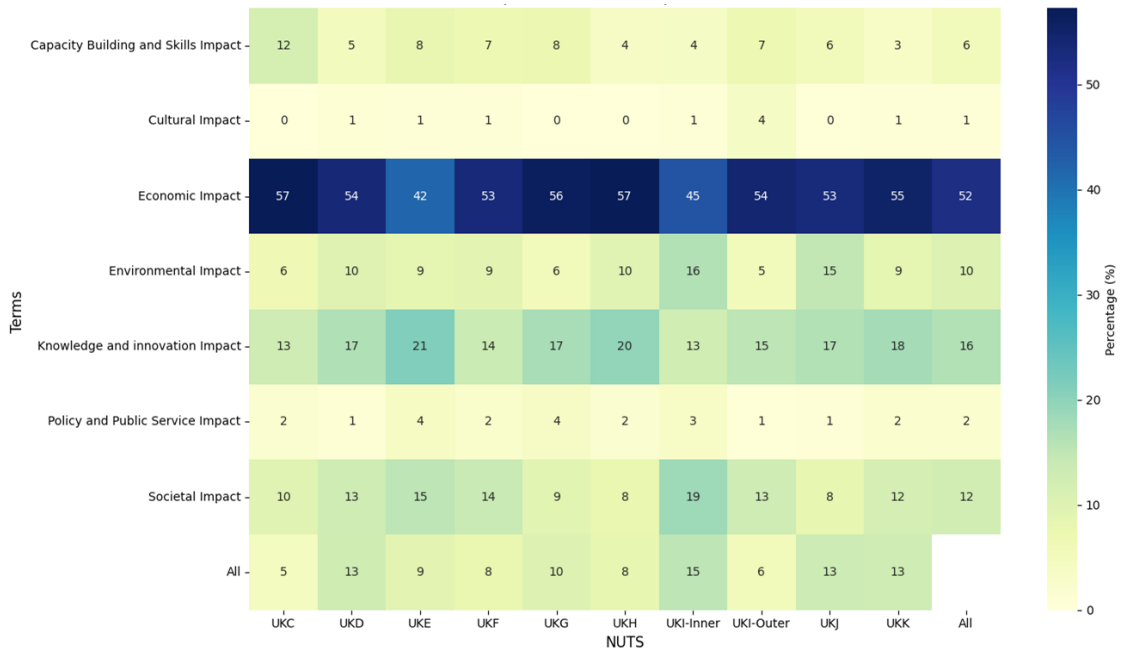
Looking at internal resources and capabilities, organisational structures and governance appear on top, with 35% of universities mentioning them in the Growth statement. The next two categories are human resources (18%) and funding mobilisation (16%). It is notable that the order of these last two categories has swapped compared to the main results.

Figure A1.3 Heatmap of Internal Resources and Capabilities terms– Growth statement



Finally, the Growth statements make economic impact even more prevalent, mentioned by 52% of institutions, which resonates with the expected nature of an entrepreneurial university that focus on commercialisation. At the same time, social impact is downgraded to a third position, reported by only 12% of institutions. Instead, impact via knowledge and innovation is the second most frequent option (16%), resonating with the narratives that links commercialisation and innovation.

Figure A1. 4 Heatmap of Impact terms by NUTS1 region – Growth statement



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