INNOVATION & RESEARCH CAUCUS

CATALYSING RURAL INNOVATION

Part 1: State of the Art Review

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EXECUTIVE SUMMARY

This report presents Part 1 of a research project considering how *business innovation can be encouraged in rural areas and the implications for innovation support capabilities in the UK*. It reviews the literature on how the nature of entrepreneurial ecosystems affects business innovation in rural areas.

Although many of the most competitive places in terms of innovation, business formation and incubation are rural, at an aggregate level rural areas tend to lag behind on new to the world innovation and uptake of some innovation support, which in turn depresses improvements to productivity, income levels and well-being. Relative weaknesses in innovation in rural areas arise from a lack of connectivity and geographical dispersion, which inhibit networking and clustering benefits. Inherent dispersion of activities in rural areas can mean more limited access to the agglomeration benefits available to urban businesses.

An understanding of rural innovation as an activity within, and a product of, place-based ecosystems of entrepreneurial, socio-economic and technological factors, can help to shape and target mechanisms for its support. Entrepreneurial ecosystems consist of multiple interacting elements that influence innovation, such as access to markets, human capital, finance, business support systems, infrastructure, and education and training.

The literature draws attention to many of the features of rural entrepreneurial ecosystems which shape innovation practices and performance. Rural firms tend to be more remote, and their access to markets, external knowledge, resources and human capital constrained by poorer infrastructure (digital, transport, housing etc.), geographical isolation and smaller local populations of customers and skilled workers. Access to external finance, particularly venture capital, is also more limited in some rural areas. Rural businesses typically have poorer access to business advisors and mentors, due to higher costs of provision and lack of a critical mass. Providers often find it hard to reach and deliver support to dispersed rural firms in a cost-effective way, leading to what is termed the 'rural premium.' Furthermore, while universities are anchor institutions in supporting and driving innovation, their locations are predominantly urban, and linkages with rural businesses are often weak. With infrastructure to support innovation largely concentrated in urban areas and dedicated rural innovation programmes mainly targeted at agri-tech, small firms in rural areas typically do not engage with innovation hubs and support agencies.

Enabling innovation in rural areas therefore involves overcoming issues arising from the dispersed geography and lower density of people and firms, and their less well-developed access to key framework conditions linked to finance/investment, human capital, markets, and public services. Innovation support does not intend to engage any

less with rural businesses compared to those elsewhere. However, due to the distinctive characteristics of rural economies (smaller firm sizes, ageing demographic, lower business densities, greater dispersion etc.), it may be necessary to either tailor mainstream innovation support approaches or to establish dedicated programmes and mechanisms, so as to ensure their reach and effectiveness for rural businesses.

When considering measures to support rural innovation, distinctions can be made between indirect and direct support interventions, as well as those which operate at the firm and ecosystem levels. Indirect innovation support relates to wider support for enterprise and the entrepreneurial ecosystem. This support should be influenced by innovation support agencies in order to enhance the effectiveness of their own innovation investment and interventions. Direct innovation support refers to the dedicated provision of innovation agencies to induce business innovation.

1. Introduction

Innovation, in its many social and technical forms, is vital to strengthening long-term business performance, economic development, and the enhanced adaptation of businesses and communities to environmental and societal change. Its drivers are often place-specific and, to be effective, innovation and enterprise policies should recognise this, and be adjusted accordingly (McCann, 2019; Nelles et al., 2023).

However, the specific foundations, challenges, and potentials of innovation within rural economies are often overlooked as part of the innovation research and policy agenda (Connected Places Catapult, 2024; Hindle et al., 2010; OECD, 2022). Such an oversight presents a potential barrier to realising the UK government's central mission to restore economic stability and improve economic outcomes in every part of the country.

Although many of the most competitive places in terms of innovation, business formation and incubation are often rural, at an aggregate level rural areas tend to lag behind on high-tech / new to the world innovation and innovation support uptake, which in turn weighs down on productivity, income levels and well-being (OECD, 2022; Phillipson et al., 2019; Roper & Jibril, 2024). In the UK, rural businesses match their urban counterparts in terms of introducing 'new to the business' goods and services as well as process innovation (Phillipson et al., 2019; Tiwasing et al., 2023). However, research also indicates less 'new to the world' innovation in remoter rural districts (Phillipson et al., 2019; Tiwasing et al., 2023). Roper and Jibril (2024) similarly find that high sparsity and long travel times lead to lower innovation intensity in rural areas (measured in terms of patents, trademarks and designs), suggesting that enterprises in the most rural areas face greater difficulties in realising the commercial development of 'breakthrough' innovations[1]. Consequently, there may be a need for more concerted and tailored approaches to promoting and supporting innovation in rural areas in order to realise the full potential of innovation and the Research and Innovation (R&I) system in strengthening inclusive growth and other social and environmental outcomes (Nelles et al., 2023).

This report presents Part 1 of a research project which has considered how *business innovation can be encouraged in rural areas and the implications for innovation support capabilities in the UK*. It provides a strategic review of the literature on how the nature

[1] In part, levels of innovation in rural areas are determined by factors relating to business composition across different localities– for example, typically a lower share of larger businesses, and high share of older businesses in many rural areas. Sectoral profile also plays a role, although OECD (2022) *Unlocking Rural Innovation* https://doi.org/10.1787/9044a961-en found that whilst the differential in rural performance on breakthrough innovation was reduced, it remained after adjusting for the share of occupations that are more likely to be involved in high-tech innovation.

of entrepreneurial ecosystems affects business innovation in rural areas. Based on the review, we present a framework for classifying innovation support measures in rural areas. In Part 2, we present an analysis of a set of interviews with senior key informants with leadership roles in the innovation ecosystem, economic development and rural policy, together with final overall recommendations from the research (see Phillipson et al., 2026).

2. Rural business and innovation

Throughout this report, our focus is on businesses in rural England, which account for 22% of registered firms (Defra, 2025), and on *non-farm business innovation* that is both *new-to-the-enterprise and new-to-the-world.*

With over a fifth of businesses based in rural areas, they are an important source of entrepreneurialism and innovation. The majority of rural businesses are smaller and micro-businesses that engage in forms of innovation shaped by their location and geography, resources, and challenges. OECD research shows that rural firms frequently introduce new products, services and processes to address challenges associated with remoteness, sparse local populations, and limited access to markets and labour (OECD, 2022).

Many of the most competitive places in terms of innovation, business formation and incubation are rural (OECD, 2022)[2]. Although rural areas are characterised by a more dispersed geography, there are higher rates of businesses per 10,000 population than in urban areas. According to data presented by Defra (2025), in 2023/24 there were 550 businesses per 10,000 population in rural areas compared with 390 per 10,000 population in urban areas. Business start-ups are lower in rural areas than in urban, but so are business deaths. Longer-term business survival rates are also better in rural areas than urban, excluding London, with a 45% 5-year business survival rate in predominately rural areas compared to 37% in predominately urban areas. The proportion of high-growth businesses in predominately rural areas is only slightly lower than in predominantly urban areas (London excluded) (4.3% compared to 4.6%).

Compared to the percentage employment in urban areas, rural areas have a greater percentage of employees working in manufacturing, accommodation and food services, agriculture, forestry and fishing, construction, transport and storage, and arts, entertainment and recreation. Tourism is another key sector where the proportion of employment from tourism businesses is higher in rural areas (14%) than urban (11%). The largest proportion of employment in both rural and urban areas across England is

[2] See also RESA-P toolkit for rural local authorities to assess the strengths and weaknesses of their entrepreneurial ecosystems https://resa-p.org.uk/

in ‘education, health and social work’ (16% in rural, 23% in urban) with wholesale and retail (13%), manufacturing (11%) and accommodation and food services (10%) the sectors with the next largest proportions of employment in rural areas. Agriculture, forestry and fishing make up 8% of total employment in rural areas. The greatest number of businesses in rural England are in ‘agriculture, forestry and fishing’ (14% of total businesses), followed by ‘construction’ and ‘professional, scientific and technical services’ also with 14% each, and ‘wholesale and retail trade’ with 13%.

Many of the sectors that are major rural employers are also key potential areas of innovation and growth relevant to the IS-8 (eight growth-driving sectors) identified in the UK’s most recent industrial strategy. The IS-8 sectors are: Advanced Manufacturing, Clean Energy Industries, Creative Industries, Defence, Digital and Technologies, Financial Services, Life Sciences, and Professional and Business Services. To illustrate their significance in rural areas[3]:

- 29% of businesses in advanced manufacturing of air, spacecraft and related machinery are located in rural areas, with 25% of jobs in this sector being rurally located.

- 33% of defence activities businesses are rural, and 22% of defence activity jobs are rural, and 39% of businesses engaged in weapons and ammunition manufacturing are rural.

- 24% of scientific R&D businesses are rural and 31% of jobs in the sector are rurally located (NICRE, 2024b)

Early analysis also suggests that, across regions, the proportions of rural and urban businesses in IS-8 sectors broadly corresponds with population levels in rural and urban areas. At a Mayoral Combined Authority level, areas with higher rural populations have a correspondingly high percentage of businesses active in IS-8 sectors. For example, across the York and North Yorkshire Mayoral Combined Authority, where it is estimated that over 42% of the population is rurally located, over 43% of their IS-8 active businesses are rurally located[4].

It is important to add that rural economies also have strong potential for convergence and cross-fertilisation across the IS-8 sectors, for example, digital technologies in agriculture, clean energy finance and investment, creative industries and design, automation and advanced manufacturing. Due to their land ownership and management

[3] Further examples can be found here: nicre-submission-to-green-paper-invest-2035-the-uk-s-modern-industrial-strategy.pdf (NICRE, 2024b)
[4] https://www.gcinsight.co.uk/mapping-the-is-8/

and proximity to natural capital, rural businesses are adaptable and resourceful innovators in sectors of global significance, such as climate change, agriculture and clean energy, often piloting new community-led and place-based solutions (OECD, 2022).

3. Entrepreneurial ecosystems and rural innovation

Entrepreneurial ecosystems receive considerable attention from both entrepreneurship and innovation researchers (Audretsch et al., 2019; Brown & Mason, 2017; Cantner et al., 2021; Cao & Shi, 2021; Colombo, Dagnino, et al., 2019; Mason & Brown, 2014; Muldoon et al., 2024; Spigel, 2017; Stam, 2015; Stam & Spigel, 2016). An entrepreneurial ecosystem refers to the actors and factors that enable or impede entrepreneurship within a given territory (Spigel, 2017, 2022). Granstrand and Holgersson (2020, p.1) define the parallel concept of an innovation ecosystem in similar terms: '*the evolving set of actors, activities, and artifacts, and the institutions and relations, including complementary and substitute relations, that are important for the innovative performance of an actor or a population of actors*.' Both concepts recognise that some spatial environments are more conducive to business formation, innovation, and growth than others. Moreover, the actors and factors that enable and inhibit entrepreneurship and innovation in a particular territory overlap (Autio et al., 2014).

Based on comparative international research, OECD (2022) presents an analytical framework for understanding and addressing the drivers of innovation in rural regions (see Figure 1). To support innovation adoption and diffusion, and to build the capacity of people, places, and firms to innovate, emphasis is placed on three cross-cutting enablers: stimulating urban-rural interlinkages to allow the free flow of ideas and mobility of people; networks, in particular strengthened University-rural linkages; and approaches which enable clustering and associated agglomeration benefits in rural areas.

Some of the relative weaknesses in innovation in rural areas arise from a lack of connectivity, distance from core markets, and geographical dispersion, which inhibit networking or clustering benefits (Giazitzoglu et al., 2024; Hindle et al., 2010). The inherent dispersion of activities in rural areas, which are often geographically remote, can mean more limited access to external resources and knowledge, as well as foregoing the agglomeration benefits available to urban businesses. Consequently, rural areas have been traditionally considered inferior, "laggard" environments to cities as a context for innovation (Florida, 2014; Kyriakopoulos, 2024), with typically scant attention

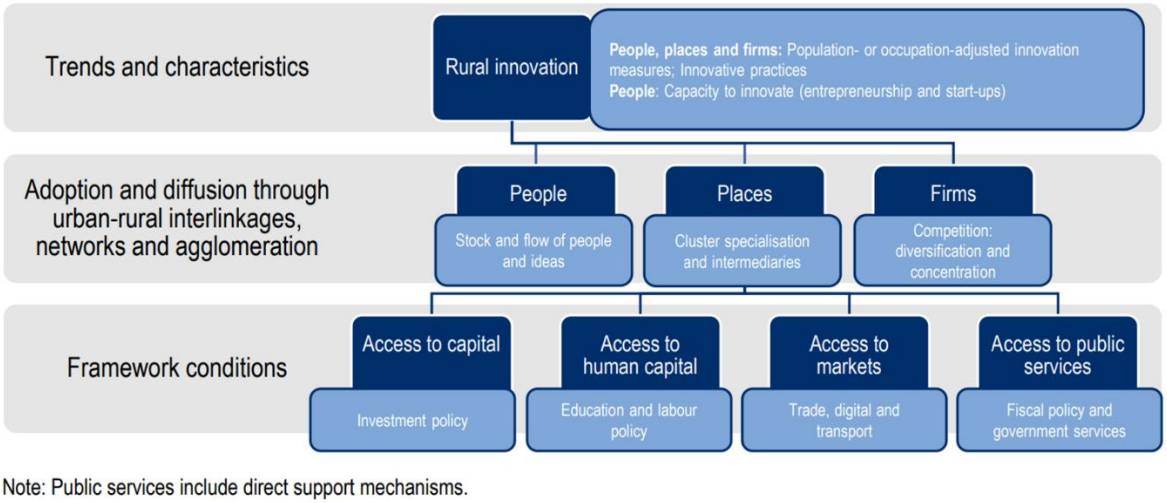

Figure 1. OECD (2022, p. 41) Analytical framework for understanding the drivers of innovation in rural regions.

given to innovations generated by rural businesses and communities (Lowe et al., 2019). These urban agglomeration benefits can be counterbalanced in some rural areas by other forces, such as the lure of more appealing living environments for employees, space for business expansion, access to natural resources, a supportive culture and norms, and increasing digitisation making it possible to work effectively in rural areas (Audretsch & Belitski, 2017).

Enabling innovation in rural areas is therefore typically seen as overcoming issues arising from the dispersed geography and lower density of people and firms, and their less well-developed access to key framework conditions linked to finance/investment, human capital, markets, and public services (Madureira & Torre, 2019; Mahroum et al., 2007; Yin et al., 2022). There is further evidence to suggest that these constraining characteristics of rural areas can stimulate new solutions to longstanding problems (Smallbone et al., 1999). In the 1990s and 2000s, several studies considered the level of innovation within urban and rural SMEs in the UK and when measured in terms of the introduction of new goods and services to market, found that rural businesses were relatively more innovative (Keeble & Walker, 1994; North & Smallbone, 2000; Smallbone et al., 2003). Similarly, Anderson et al. (2005) discovered that more rural than urban businesses had introduced a new method. North and Smallbone (1996) argued that the characteristics of the rural environment, particularly low population and business densities, drove rural businesses to become more innovative as a necessary coping strategy. Likewise, Steiner and Atterton (2015) suggests that the remoteness of many rural areas promotes the development of adaptive capacities. More recently, Phillipson et al. (2019) present evidence that rural businesses are more likely to introduce new or improved goods and firms located in largely rural local authorities are more likely to introduce new or improved processes but not new to the world products.

In a similar vein, as rural areas are often at the leading edge of adapting to critical challenges around climate change, clean energy transition, demographic ageing, and pressures around service delivery, this can be a stimulus for experimentation and learning, with local place-based innovation central to overcoming challenges around accessing networks, labour, markets and services (health and social care, transport, housing, education, digital infrastructure etc.) (Lowe et al., 2019).

The OECD (2022) framework identifies a need for a more encompassing, ecosystems-based understanding of innovation, which extends beyond a science and technology lens, to include forms of innovation which are network oriented, social in form, multi-sector, or place and process-oriented. Embracing innovations which may flourish in places that are geographically isolated, more community connected or tied to local nature-based amenities and solutions, is also likely to better reflect sources of rural innovation. Integrating these efforts within a place-based approach is essential, if the unintended inequalities that can arise from innovation-induced structural change are to be avoided or reduced (OECD, 2022). An understanding of (rural) innovation as an activity within, and a product of, place-based ecosystems of entrepreneurial, socio-economic and technological factors, can in turn help to shape mechanisms for its support.

Entrepreneurial ecosystems consist of 'a multidimensional set of interacting factors' (Bruns et al., 2017, p.31) that 'determine the entrepreneurial performance of a region or locality' (Spilling, 1996, p.91). While typologies of entrepreneurial ecosystem components vary (Audretsch & and Belitski, 2021; Cavallo et al., 2019; Stam & van de Ven, 2021), a commonly adopted approach is that of the World Economic Forum (2013). The latter identifies eight pillars of entrepreneurial ecosystems: (1) Accessible markets, (2) Human capital workforce, (3) Funding and finance, (4) Mentors, advisors, and support systems, (5) Regulatory framework and infrastructure, (6) Education and training, (7) Major universities as catalysts, and (8) Cultural support. Table 1 summarises how each of the eight elements relate to innovation, and their key characteristics in rural localities.

The pillar of *accessible markets* refers to proximity to domestic customers and the ease of exporting. Market access is essential for identifying new business opportunities and commercialising innovations. However, rural businesses are typically more geographically isolated from major markets and customers (Phillipson et al., 2019) and face thinner local markets, as population and purchasing power tends to be weaker (North & Smallbone, 1996). Consequently, rural businesses often require support to access new markets and identify opportunities for new product development (Hindle et al., 2010; Lee & Brown, 2016).

The *human capital / workforce* pillar refers to businesses' access to managerial, entrepreneurial, and technical talent, as well as their ability to outsource work and

access to immigrant workers (World Economic Forum, 2013). Human capital is an important determinant of business innovation (Dakhli & De Clercq, 2004) and both are often tacit, and sector-specific. Regarding this pillar, rural firms are typically disadvantaged compared to their urban counterparts. Specifically, rural firms have smaller pools of managerial and technical talent to draw on, especially of young people, which can lead to widespread recruitment and retention issues (de Hoyos & Green, 2011; NICRE, 2024). Rural labour markets also tend to be less diverse (de Hoyos & Green, 2011), disadvantaging rural businesses as demographic and task related diversity are positively associated with technological and innovation performance (Faems & Subramanian, 2013). However, entrepreneurial talent is often more prevalent, when measured by the number of businesses per thousand population in rural areas compared against urban districts (Defra, 2025).

Funding and finance refer to a range of capital sources (family and friends, banks, grants, angel investors, venture capital, and private equity). Finance is vital for funding investments in innovation, particularly new to the world innovation (Giebel & Kraft, 2019). However, due to uneven spatial distribution of equity finance in the UK (Cowling & Brown, 2025), rural firms have poor access to equity financing / venture capital (Colombo, D'Adda, et al., 2019). In terms of debt finance, innovative rural firms may suffer from a 'liability of distance'. Specifically, Lee and Brown (2016) find that the demand for bank finance by innovative firms is higher in remote, rural locations but such firms are more likely to be discouraged from applying, and also have their applications for finance rejected, even after controlling for other determinants such as creditworthiness. Importantly, weaker access to bank finance is not due to lower returns on investment - Khafagy et al. (2025) found that the positive impact of external finance on growth is stronger for rural, compared against urban, businesses, often due to the former facing fewer local competitors. Bank branch closures, which have disproportionately affected rural areas, are likely to exacerbate the liability of distance (Clark et al., 2024). However, in part due to weaknesses in access to external finance, rural businesses are more likely to draw on informal networks and family resources to finance business adaptation and innovation (Phillipson et al., 2004), which may hinder firms' innovation capability in the future (Khafagy et al., 2025; Phillipson et al., 2004).

Table 1. Entrepreneurial ecosystems, innovation, and rural support needs

Entrepreneurial ecosystem elements as defined by WEF	Relationship between entrepreneurial ecosystem element and innovation	Characteristics of entrepreneurial ecosystem element in rural localities
Accessible markets	Market access essential for commercialising innovations. Inverted-U relationship between competition and innovation. At low levels, increasing competition leads to more innovation but the opposite happens at very high levels of competition (Aghion et al., 2005).	Rural businesses are more distant from major markets but face lower local competition (Phillipson et al., 2019).
Human capital workforce	Human capital positively associated with innovation (Dakhli & De Clercq, 2004).	Rural firms have a smaller pool of local labour to draw on, especially of young people, which can lead to widespread recruitment and retention issues (NICRE, 2024a).
Funding and finance	External finance vital for funding investments in innovation, particularly new to the world innovation (Giebel & Kraft, 2019).	Rural firms have poorer access to equity financing / venture capital, and have been disproportionately affected by bank branch closures (Clark et al., 2024).
Mentors, advisors, and support systems	Business advisory and support systems engagement positively associated with innovation (Cumming & Fischer, 2012).	Rural businesses have poorer access to business advisors and mentors, due to higher costs of provision and lack of a “critical mass” of businesses (Hindle et al., 2010).
Regulatory framework and infrastructure	IPR regulation supports new to the world innovation. Digital infrastructure supports both new to the world and new to the business innovation (Du & Wang, 2024).	Regulatory frameworks often set at national level with IP protection supporting new to the world innovation. Digital infrastructure often substantially worse, especially in remote rural areas. Availability of transport infrastructure and affordable housing major barriers for businesses in rural areas (NICRE, 2024a).
Education and training	Training can improve access to leading-edge and background knowledge increasing businesses’ propensity to innovate (Bauernschuster et al., 2009).	Access to training and education providers is patchier in rural areas, leading to difficulties in the provision, of, for example, workplace apprenticeships.
Major universities as catalysts	Universities increase the innovative activity of regional economies (Cowan & Zinovyeva, 2013; Cunningham et al., 2025).	University locations are skewed to urban/city sites, and they typically have weak linkages with rural businesses (Charles, 2016) characterised by a lack of trust and mutual understanding (Cunningham et al., 2025).
Cultural support	Entrepreneurial cultures characterised by proactiveness, risk taking and tolerating failure, are associated with greater innovation (Leal-Rodríguez et al., 2017).	Rural areas typically have higher numbers of businesses per ‘000 population (Defra, 2025) but, as with urban locations, there is a long tail of low productivity businesses (Tiwasing et al., 2023).

The *mentors, advisors, and support systems* pillar encompasses professional support systems (formal advisors), incubators and accelerators, as well as peer to peer networks of entrepreneurs. Such support can foster both new to the business and new to the world innovation (Cumming & Fischer, 2012). Rural businesses, however, typically have poorer access to business advisors and mentors, due to higher costs of provision and lack of a "critical mass" of businesses (Hindle et al., 2010). Providers often find it hard to reach and deliver support to dispersed rural firms in a cost-effective way, with delivery of services and achievement of service targets more easily and efficiently achieved through interactions with urban, spatially concentrated firms (an issue referred to as the 'rural premium'). This can lead to rural businesses being overlooked despite returns on innovation investment being higher in non-metropolitan areas in terms of jobs, productivity, and incomes (OECD, 2020, 2022). Moreover, with infrastructure to support innovation largely concentrated in urban areas and dedicated rural innovation programmes mainly targeted at agri-tech, small firms in rural areas typically do not engage with innovation hubs and support agencies, and often perceive them to be remote or oriented to larger, higher growth firms (Hindle et al., 2010). Similarly, incubators and accelerators are also typically located in urban areas, although other rural workspaces such as enterprise hubs and their managers may provide innovation advice and peer to peer business support (Merrell et al., 2022).

The *regulatory framework and infrastructure* pillar captures how easy it is to start and run a business, as well as access to key technical-material infrastructure like broadband, public transport, and electricity. International evidence suggests that the level of regulation has an inverted U-shaped relationship with entrepreneurship quality and quantity, highlighting the dangers of too little and too much regulation (Audretsch et al., 2024). Important aspects of the regulatory framework in respect to business innovation such as Intellectual Property Rights (IPR) protection, taxation, and capital allowances are set by the national government and do not differ between urban and rural locations.

However, access to critical infrastructure varies spatially. While digital infrastructure supports both new to the world and new to the business innovation (Du & Wang, 2024), broadband speeds and availability continue to lag in remote, rural locations in the UK. For the businesses affected, this generates substantial operational constraints, affecting their ability to innovate. The availability of transport infrastructure and affordable housing also tend to be worse for rural businesses (NICRE, 2024a), constraining high growth rural businesses (Nguyen et al., 2025).

The *education and training* pillar refers to the nature and availability of the workforce as well as entrepreneur specific training. Both matter for business innovation, with training, in particular, able to improve access to leading-edge and background knowledge, increasing businesses' propensity to innovate (Bauernschuster et al., 2009). Generally, educational attainment, measured in terms of GCSE performance, is higher for pupils in England's rural areas compared against their urban counterparts (Defra, 2022). However, after controlling for the level of deprivation, rural areas register inferior outcomes (Defra, 2022) and disadvantaged

young people from urban areas of England are significantly more likely to gain entry to an elite university than similarly disadvantaged rural young people (Davies et al., 2021). While the quality of schools varies substantially across England, rural families may have fewer options, and lower educational attainment, coupled with the out-migration of the highest performing pupils to largely urban based universities, further compounds labour recruitment and retention problems for rural businesses. Training provision also tends to be patchier in rural areas.

Universities can play important roles in entrepreneurial ecosystems, supporting ideation, spin-offs, and spinouts, patent registration, as well as facilitating access to testing and other equipment, and supplying graduates for businesses (Cunningham et al., 2025; Cunningham et al., 2017; Guerrero et al., 2015). Consistent with this, empirical evidence suggests that universities can increase the innovative activity of regional economies (Cowan & Zinovyeva, 2013). However, in England university locations are skewed to urban/city sites, with higher education institutes often having weak linkages with rural businesses (Charles, 2016). Rural businesses' engagement with universities is hampered by a lack of trust, and mutual understanding concerning expectations and priorities, complicated and bureaucratic technology and knowledge transfer policies and processes, and a lack of suitable staff to support collaborations (Cunningham et al., 2025). Moreover, rural counties in England typically suffer from a net loss of young adults who migrate to urban areas to attend university, never to return (Champion et al., 2024).

Finally, *cultural support* refers to entrepreneurial orientation, preferences for self-employment, the presence of role models and celebration of innovation (World Economic Forum, 2013). Entrepreneurial cultures characterised by proactiveness, risk taking and tolerating failure, are associated with greater innovation (Leal-Rodríguez et al., 2017), with some localities having cultures which are far more favourable to entrepreneurship than others. Analysis of Global Entrepreneurship Monitor data indicates that entrepreneurial activity is higher in the UK's rural areas (Ozusaglam et al., 2022). This evidence is consistent with the number of businesses per head of population, which is higher in rural compared with urban areas in England (Defra, 2025). However, as with urban locations, there is a long tail of low productivity businesses in rural areas – with low levels of innovation. For instance, Longitudinal Small Business Survey data suggests that less than a third of both urban and rural businesses introduced new or improved services in the previous three years, and less than 20 per cent introduced new or improved goods over the same time period (Phillipson et al., 2019).

Overall, this evidence suggests that entrepreneurial ecosystems display specific characteristics and features in rural areas, which affect business performance. However, while regarding some pillars, rural businesses face constraints (e.g. accessible markets) this does not apply to all aspects of the entrepreneurial ecosystem. England's rural areas have strong levels of early-stage entrepreneurial activity, but levels of new to the business and new to the world innovation remain relatively low. This raises questions as to how the innovation support system could be reformed to better meet the needs of rural businesses.

4. Framework for innovation support in rural areas

The drivers and levers of innovation therefore span multiple pillars within the entrepreneurial ecosystem, and border several domains of policy, from science and technology, through to enterprise and start-up, infrastructure provision, education and skills, local place-based development, and taxation.

Innovation support refers to all measures which seek to enhance enterprises' new to the world and / or new to the business innovation. When considering measures, distinctions can be made between indirect and direct support, as well as those which operate at the firm and ecosystem levels (Table 2).

Table 2. Direct and indirect innovation support measures and selected examples (Source: Authors)

Direct innovation support for:		Indirect innovation support for:	
Firm level innovation	**The innovation ecosystem**	**Enterprise and entrepreneurship at the firm level**	**The entrepreneurial ecosystem**
Examples: Bespoke innovation support advice provided to enterprises, often focused on new to the world innovation. Innovation peer to peer initiatives.	**Examples:** Incubator and accelerator workspaces. Place-based initiatives supporting linkages between universities and businesses. Local or national innovation strategies.	**Examples:** General business support and advice services and strategies. Pre-start-up or start-up support initiatives. Scale-up support. Business support for specific demographics: e.g. women, young or older entrepreneurs.	**Examples:** Skills development programmes and apprentice schemes. Digital ('last mile') or transport infrastructure initiatives. Innovation in public service delivery.

4.1 Direct Innovation Support

Direct innovation support refers to *dedicated tangible resources designed to specifically induce business innovation*. These may operate at the firm level, through for example grants and advice to develop a new product or service, or the innovation ecosystem level (e.g. place-based approach). In relation to rural businesses, a fundamental aspect relates to some of the spatially defined factors linked to (physical or digital) distance which impact rural innovators'

access to markets, knowledge and resources. This includes tackling barriers to access to direct innovation support and leadership development programmes, as well as enhancing the availability of external finance for innovation, including for social entrepreneurs. The dispersed distribution of rural businesses can place additional relevance on approaches to delivering support on a collective/group basis, with rural firms themselves often expressing a preference for collaborative solutions and peer-to-peer learning.

Direct innovation support may involve supporting rural innovators to connect to networks and external sources of knowledge, including university and innovation infrastructure, which can often require the help of brokers or other intermediaries. Where rural areas are able to leverage digital capabilities, networks that promote linkages can take on a vital role in overcoming disadvantages related to distance and catalyse innovation (OECD, 2022).

Universities and other innovation institutions have a vital role to play in developing closer ties with rural actors (businesses, communities, and other key players) (OECD, 2014). In part this challenge relates to bridging the gap for rural innovators and entrepreneurs looking to participate in cutting edge research and development. Full realisation of innovation potential in rural areas also implies incentivising and adopting a broader approach to the relationships between rural innovators and universities, to expand their reach in rural areas. This includes extending the conventional focus on technological development, knowledge transfer and formal R&D, to building rural-university networks for knowledge exchange and co-designing innovations to equip and meet the needs of rural places (Cunningham et al., 2024; Lowe et al., 2019; OECD, 2022).

At a more strategic level, tailoring of local innovation action plans or national innovation strategies in such a way as to address rural opportunities and challenges is especially significant. As the framework conditions vary across local economies, it follows that support for innovation needs to go hand in hand with a place-based approach. The Connected Places Catapult (2024), for example, suggests that there 'is considerable scope for non-urban places to increase productivity and support local innovation. To realise this potential, it is crucial to enhance the local evidence base, identify opportunities, and build compelling business cases for investment within locally developed innovation strategies. These strategies should be integral to nationally funded schemes aimed at driving local growth, ensuring alignment with updated national guidelines' (p.21).

Adapting the bundle of prevailing metrics and measures of innovation may also be needed in order to fully account for impacts of direct innovation support (OECD, 2022). Established measures such as registration of patents, levels of R&D, can be better suited towards larger, high-tech firms, which tend to possess more capital and spend more on R&D, or knowledge intensive services, which are less well represented in most (though not all) rural areas.

4.2 Indirect innovation support

Indirect innovation support relates to measures for businesses and the entrepreneurial ecosystem, which are not dedicated to innovation but nonetheless support it. For instance, general business support and advisory services may cover a range of topics such as cashflow and customer relationship management but will also help businesses to update their market offerings and processes. Consequently, much firm level innovation support is embedded within wider business support.

Innovation support agencies may also influence other policy domains, strategies, interventions and support services, in order to prepare the ground for and enhance the effectiveness of their own innovation investment and support. In relation to rural areas, this could include influencing efforts to promote access to local labour and skills, or to tackle infrastructural and connectivity barriers through improved digital connectivity or transport infrastructure. At a strategic level, it could involve tailoring local or national economic development or industrial strategies in such a way as to address rural opportunities and challenges.

5. Summary of review

The enabling conditions for rural innovation cut across several domains of policy and practice, spanning innovation policy itself, through to enterprise and economic development, and several wider policy areas which impact the key framework conditions for innovation. Some of these are not specific to rural (e.g. national taxation and business regulations) and much innovation support does not intend to engage any less with rural businesses compared against urban ones. However, due to the distinctive characteristics of rural economies (smaller firm sizes, ageing demographic, lower business densities, greater dispersion etc.), rural firms may be overlooked by actors in innovation support systems.

In reviewing the innovation support system, it is important to note that the enhancement of innovation support in rural areas presents both a key challenge and a unique opportunity for mission-oriented ‘meta-innovation’ (Roper et al., 2024). This concept relates to both how innovation is undertaken and encouraged through its support processes, structures and objectives, and how innovation is evidenced, evaluated and researched:

- *How innovation is undertaken and encouraged:* further harnessing rural economies within the innovation system will be key to delivering and potentially leading innovation missions for our economy and society concerning green growth, healthy ageing, and adaptation to environmental change, and to realising the aspiration for more spatially tailored and inclusive innovation frameworks, practices, and processes.

- *How innovation is evidenced, evaluated and researched:* there is a need to develop capabilities and approaches to better understand how key components of the entrepreneurial and innovation ecosystem are experienced in rural contexts, in order to address barriers and opportunities.

Tackling these twin issues points to the need and opportunity for applying participatory, multi-stakeholder approaches that combine practical place-based innovation with action-oriented research with rural businesses and communities to build creative solutions that support their adaptation to pressing environmental and socio-economic instabilities and transitions.

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