3 Policies and programmes for innovation in rural areas in the United States

This chapter aims to shed light on the main policies and programmes targeted specifically for rural innovation. It discusses the scope of the definition of innovation, the main federal institutions in charge of policies and financial initiatives to support entrepreneurs. The chapter uses analysis gathered from desk research, and case study visits to Gallup, New Mexico, Pine Bluff, Arkansas, and Columbiana, Ohio.

Key messages

- **To be effective, rural innovation policy must consist of more than providing direct supports to firms or access to capital. A broader rural innovation policy is needed** that encompasses an understanding of innovation systems, territorial linkages and the environment that makes a place attractive to invest and live in. *Product* and *process* innovation must be considered, along with connections to broader rural economic development actions. Innovation in the provision of public and private services is especially important in rural areas because they are relatively underserved compared with their urban counterparts.
- **"Boots-on-the-ground" support for innovation in rural areas can improve awareness and programme uptake.** Support may be targeted to entrepreneurs, local community outreach organisations, non-governmental organisations (NGOs) that work in rural areas and other organisations, as well as to various forms of social enterprise. In addition, supporting innovation by local government agencies to allow more effective provision of core public services enhances the ability of rural places to contribute to national growth. Finally, because each state administers its own programmes to support rural development, opportunities for aligning federal and state efforts have to be built into policy and programme design.
- **Simplifying eligibility criteria can help increase programme uptake.** Currently a number of different spatial units are used to define eligibility for federal programmes, including counties, multi-county regions, and municipalities of differing sizes. This can make it hard for local governments to construct a development strategy when some of the specific programmes they need are not available because they do not meet the selection criteria.
- **In rural America, many local governments serve populations that are too small to have a viable economic development strategy that does not involve collaboration.** EDA's approach of fostering collaboration within regions could serve as a model for other agencies.
- **Financial intermediaries can help bridge rural "capital access gaps" but they are not widely available.** Increasing support for intermediary financial institutions willing to serve rural areas could make a significant difference. Although most rural communities have a variety of financial intermediaries, they are often focused on consumer or household credit and can be reluctant to fund new businesses. In rural places where incomes and wealth are low, business creation is often blocked by an inability of the enterprise to assemble sufficient equity funds to allow a bank or other lender to provide a loan. In particular, in communities with high rates of poverty and where discrimination has a long history, the problem of access is even greater.

The United States is a major source of global innovation. The key sectors that have fuelled recent economic growth include telecommunications, financial products, biotechnology, advanced manufacturing, computer hardware and software, and pharmaceuticals. Such advances are supported by a strong basic and applied research system, deep pools of investment capital and a large pool of venture capital that funds fledgling entrepreneurs who have new ideas thought to have high potential. As a result of this and high levels of Intellectual Property rights protections, the US leads the world in patent filings and in investments in formal research and development.

There is a pervasive urban bias in innovation studies, with presumptions that innovation is driven by proximity and connectivity of key agents. However, rural areas are also sites of innovation. Innovations that arise *from* rural areas include innovations in agriculture and manufacturing plus cross-sectoral innovations in food processing and tourism. These may be aimed at applications elsewhere, such as the food and consumption preferences of urban dwellers or be linked to global value chains. Additionally, other innovations (those that originate in metropolitan areas but *target* rural areas) are wide ranging and include research, science and technology investments that have widespread application in rural economic activities such as mining, manufacturing and agriculture. Finally, there are innovations that are *universal* in nature, but which strongly impact rural life—from cloud computing and the internet of things to distributed manufacturing.

For example, the United States has long been a leader in agricultural research through direct federal research conducted within the United States Department of Agriculture (USDA), which has a considerable number of specialised research centres across the country. In addition, the USDA supports research conducted by Colleges of Agriculture in all 50 states through a system of formula funding and competitive grants. Since 1919, these Colleges have also engaged in a research dissemination process, called Cooperative Extension, that provides technical assistance to farmers based on research supported by USDA. Farmers also benefit from research conducted by large manufacturing and agrochemical firms that, while urban based, produce machinery, fertilizers, pesticides and new plant and animal genetic material for use in commercial agriculture. Thus, some research that takes place in urban places is specifically targeted for use in rural areas, which has contributed to high levels of productivity exhibited in the sector over the last century. In addition, medical research, renewable energy research and various other significant formal research fields have significant impacts on rural areas. However, most of the formal innovation research conducted in the United States has only weak direct connections to rural people and the rural economy.

This chapter demonstrates that a considerable amount of innovation occurs in rural areas and that much of this innovation makes a significant difference to local communities and the local economy, even though it may not have a large impact beyond the immediate region. By strengthening local firms and improving local communities, these innovations spur businesses and people in rural areas to improve their competitiveness. Rural innovation collectively makes a positive contribution to the national economy while improving local well-being.

Policies and programmes that impact rural innovation in the United States

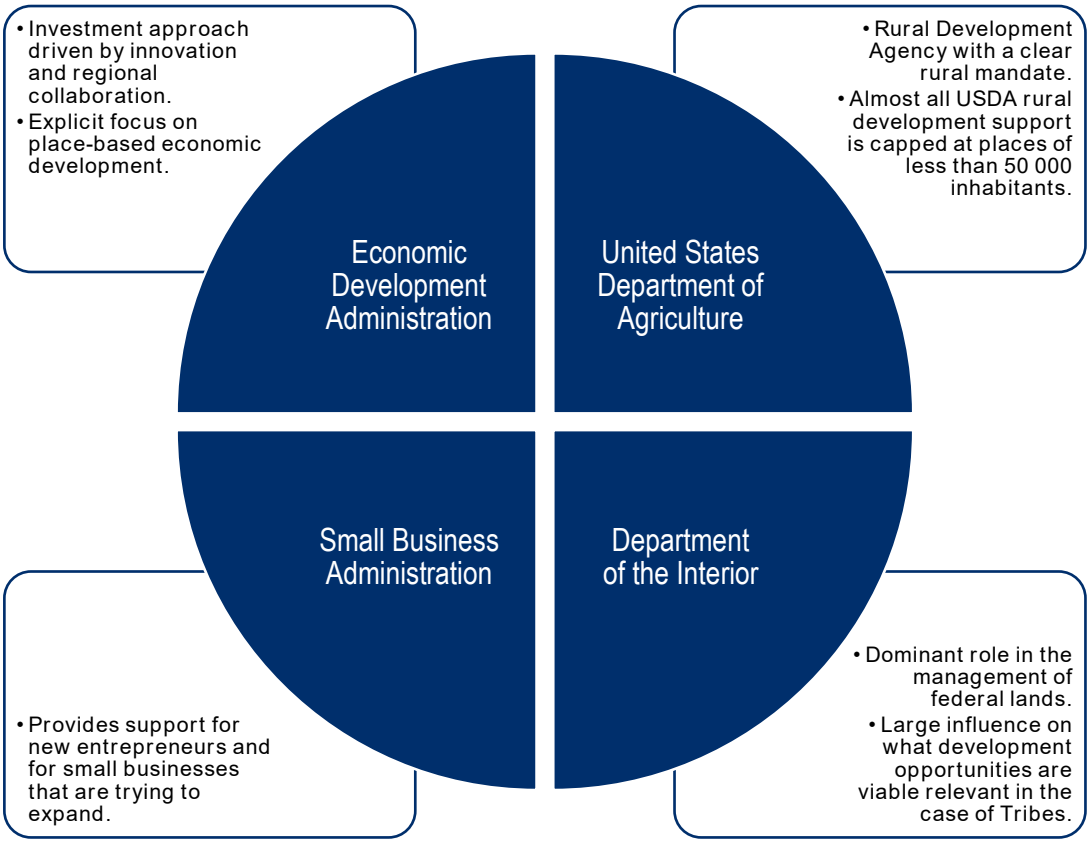
The federal government plays a significant role in fostering rural innovation

Like many OECD countries, rural policy in the Unites States has evolved from a focus on the agricultural sector towards a more multi-functional view of rural development. The United States Department of Agriculture (USDA) has a key role in supporting rural innovation alongside the Economic Development Administration (EDA), the Small Business Administration (SBA) and the Department of the Interior (Figure 3.1). Local governments in rural regions are fiscally constrained and typically depend upon

transfers from national or provincial/state governments for a major share of their funding, hence the importance of these agencies.

While each agency has its own areas of programmatic focus, it remains important that resources and interventions are co-ordinated. Failure to do so can detract from the effectiveness of the rural innovation ecosystem. Despite their central roles, the USDA and EDA lack the authority to influence the policies and actions of other Departments. As a result, informal arrangements and/or joint agency memorandums of understanding are commonplace and these tend to drive interdepartmental collaboration. Creating mechanisms to co-ordinate rural policy both within and across governments is a common challenge among OECD countries.

Figure 3.1. Key federal agencies for rural innovation



The USDA has a formal responsibility for the co-ordination of rural policy

The United States Department of Agriculture (USDA) is a massive department, with 29 agencies and over 100 000 employees operating across 4 500 locations and has long been involved in innovation (Box 3.1 and Box 3.2). The Department provides leadership on food, agriculture, natural resources, rural development and nutrition. Its numerous programmes are authorised and described in the USDA Farm Bill, which encompasses more than 40 programmes that directly address rural development (Box 3.2).

Formal rural policy is mainly defined by the Farm Bill. Its rural development title creates and amends programmes focused on: rural utility systems (i.e., water, waste disposal, electricity, broadband), rural business, and rural housing. These programmes are administered by the USDA Rural Business-Cooperative Service, USDA Rural Utilities Service, and USDA Rural Housing Service.

Individual programmes typically offer some combination of technical assistance, direct loans, loan guarantees or grants. USDA funding and technical support plays a significant role not only in helping innovative rural firms, but also in supporting innovative rural governments and innovative rural organisations deliver better public and quasi-public services in rural America.

The Rural Development Agency within the USDA is central to these efforts – its overarching mission is to run programmes to improve the economy and quality of life in rural America. The core activities and main types of programmes offered through the Rural Development Agency are:

- **Rural Housing Service** – support new construction and renovation of single-family homes and multi-family housing, as well as the construction of community facilities, such as schools, libraries and hospitals.
- **Rural Business Cooperative Service** – provides a variety of financial support to small rural businesses either directly or through lenders to these firms, supports the creation of new rural revolving loans that will lend to rural firms, supports research and adoption of new technology for biofuels or other bio-based chemistry applications and the development of new co-operatives in rural areas.
- **Rural Utilities Service** – provides financing for a range of infrastructure programs including, water and sewage treatment and distribution, improved broadband connectivity, and rural electric and telecom distribution systems.

These programmes are only available in rural communities, where other sources of funds and technical assistance are highly limited. Almost all USDA rural development support is capped at places of less than 50 000 while the majority of programmes are restricted to towns of less than 35 000. USDA funding and technical support can play a major role in helping innovative rural firms, but it plays an essential role in supporting innovative rural governments and innovative rural organisations to deliver better public and quasi-public services in rural America.

Box 3.1. The USDA Land Grant system supports rural development

Since the 19th century, the USDA has conducted agricultural research internally, through national research centres focused on increasing the productivity of American farms. These USDA research stations have provided new crop varieties, identified better cropping methods and improved livestock genetics, and provided other innovative approaches to farming.

The USDA has also supported agricultural research at Land Grant Universities in all 50 states since the 1870s. The scope of the research and dissemination activities undertaken at Land Grant Universities has expanded beyond agriculture to include community and economic development in rural areas, and this effort provides support to both rural firms and rural governments and local actors across a large portion of the country.

Both basic and applied innovations in agriculture have been disseminated to farmers through the Cooperative Extension Service that was established in 1916. Funding for the adoption of new technologies by farmers has been supported through direct loan programs of USDA and through the federally sponsored Farm Credit System. In addition, the USDA supports the creation of a wide range of input supply and marketing co-operatives to facilitate famers access to inputs and improve their prospects for selling farm output in rural areas where competition is limited. The UDSA's innovations are not restricted to agriculture. They have also provided: support for rural electrification, installation of telephones, and more recently, expanding access to broadband through the Rural Utility Service.

Box 3.2. The United States Farm Bill and rural development programmes

Every five years, the United States Congress passes legislation that sets national agriculture, nutrition, conservation, and forestry policy, commonly referred to as the "Farm Bill". Since 1973, omnibus farm bills have included a rural development title, which has included USDA Rural Development programmes focused on: rural utility systems (i.e., water, waste disposal, electricity, broadband), rural business, and rural housing.

Formal rural policy is mainly defined by the Farm Bill. The rural development title of the farm bill reauthorises, amends, and creates programmes administered by the USDA Rural Development Agency. The rural development title also addresses emerging issues affecting rural communities. These programmes are administered by the USDA Rural Business-Cooperative Service, USDA Rural Utilities Service, and USDA Rural Housing Service. For example, the 2018 farm bill:

- Added a grant component to the Rural Broadband Program.
- Required that at least 50% of households in the proposed service area lack sufficient broadband access, for direct loans.
- Increased the threshold for sufficient broadband access from 4 megabits per second download, 1 megabit per second upload (4/1 mbps) to 25/3 mbps.
- Raised the authorisation of annual appropriations to USD 350 million from fiscal years 2019 to 2023.
- Raised the maximum amount of project financing for the water and waste disposal revolving loan fund from USD 100 000 to USD 200 000 per project.
- Authorised USDA to make grants to entities that provide technical assistance and training to support applications for rural business-co-operative service programmes.
- Established the Rural Innovation Stronger Economy (RISE) programme to create job accelerators to assist distressed rural communities in creating high-wage jobs and accelerating the formation of new businesses.

Most USDA Rural Development programmes rely on discretionary funding, which Congress authorises in farm bills and funds through the annual appropriations process. Notably the definition of eligibility for each programme can vary considerably, which leads to significantly different levels of federal support across rural America. Moreover, while the Farm Bill authorises the existence of programmes, the actual amount of annual funding for each programme is determined separately by the Agricultural Appropriations subcommittees of the House of Representatives and the Senate. This means that the funding level for any given programme is uncertain beyond the current year which can make strategic planning and programme delivery challenging.

Source: CRS (2023[1]), "Farm bill primer: What Is the farm bill?", https://crsreports.congress.gov/product/pdf/IF/IF12047 (accessed on 24 March 2023).

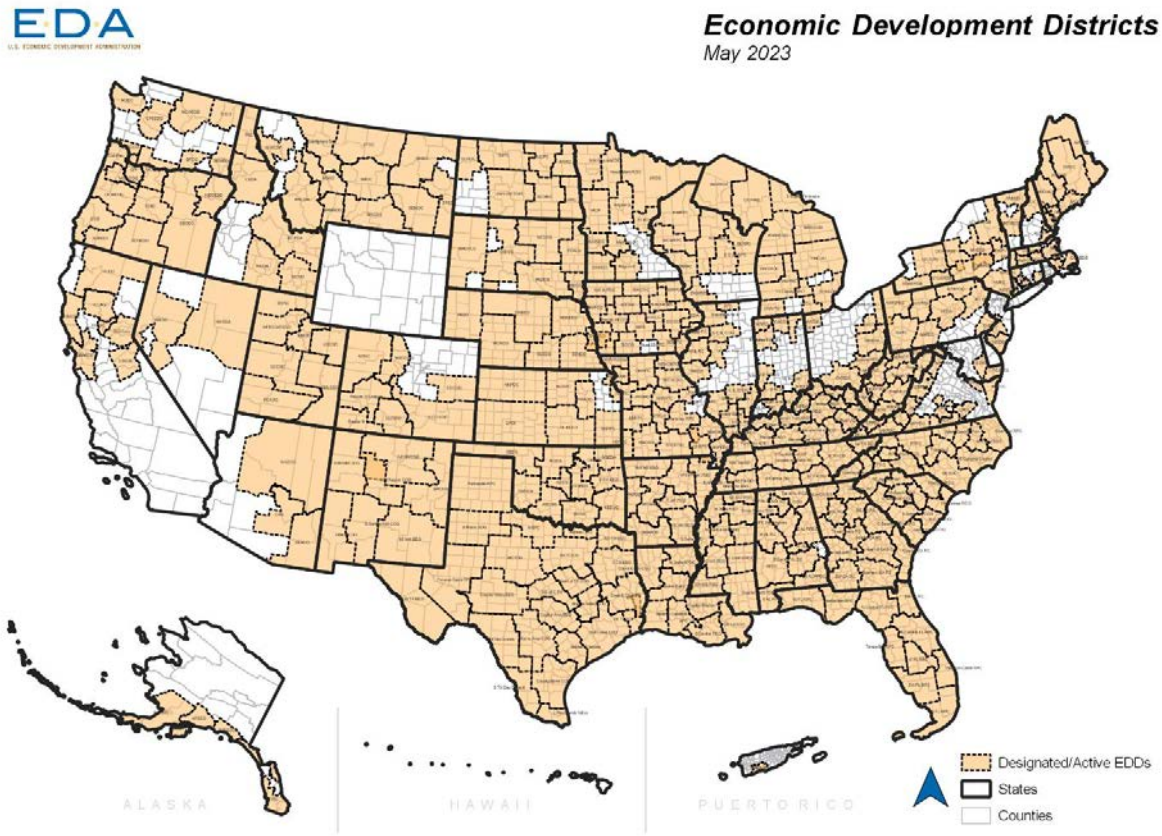
The EDA is the only agency with an explicit focus on place-based economic development

The EDA is a bureau within the US Department of Commerce that promotes innovation and competitiveness in American regions. It works through a planning and investment approach driven by innovation and regional collaboration and focuses on both economic development and disaster recovery (EDA, n.d.[2]). It provides support to a large number of primarily county-based[1] regional economic development organisations that tend to be located in rural areas. In this way, the EDA is a strong example

of a federal department that pushes for decentralised development decision making and the use of regional development agencies or bodies (Figure 3.2).

Economic Development Districts (EDDs) are multi-jurisdictional entities, commonly composed of multiple counties and in certain cases even cross-state borders (Figure 3.2). As the figure shows, EDDs cover most of the country but there are many places where they do not exist, not excluding rural counties. Each EDD applicant must contain at least one county that meets EDA's economic distress eligibility criteria, and the group must prepare a Comprehensive Economic Development Strategy (CEDS) that includes all the counties (EDA, n.d.[3]). In developing the CEDS the applicant group is expected to include local politicians, business leaders and other key stakeholder groups from the various counties to ensure that the resulting plan is broad-based and inclusive. The intent is to link counties with a shared economic structure and to encourage them to collaborate on a common development strategy. The EDD is eligible for financial assistance to support infrastructure investments and for funding for business development. Although EDDs cover a large part of the nation, there are considerable gaps in coverage, in part because prosperous areas are not eligible for EDA assistance.

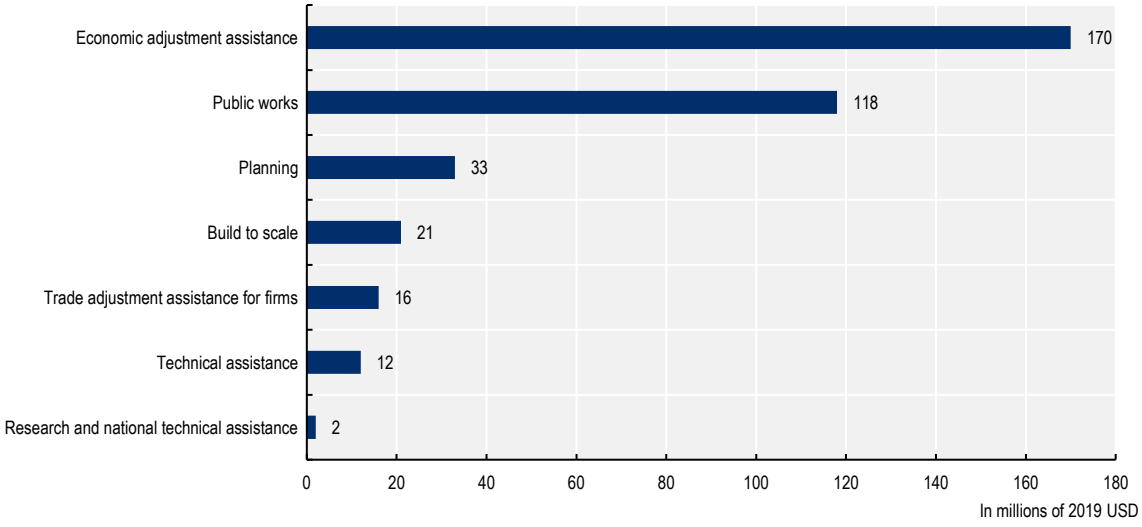
Figure 3.2. Economic Development Districts



Source: National Association of Development Organisations and EDA.

EDA's six regional offices cover all U.S. states and territories (including Puerto Rico, Guam, the Islands). This can allow each district to focus on the most appropriate subset of EDA programmes that meet regional needs and develop a delivery approach that connects to client groups. One problem--which the EDA is working to resolve--is when EDDs intersect. If counties are in different EDDs or they are in different EDA districts but see opportunities to co-operate. For instance, the Navajo Nation spans four states which complicates its efforts to work with adjacent counties. In recent years (2011-19), the vast majority of EDA funds have gone to supporting projects within EDDs that address either the loss of employment due to structural change or the need to alleviate poor infrastructure (Figure 3.3) (Theodos et al., 2021[4]). However, the EDA is limited by its levels of annual appropriations for regional economic development activities, especially in the crucial areas of planning and innovation. EDA grants are typically used in conjunction with other forms of funding by EDDs or other recipients. This leverage effect is particularly important for certain programmes, such as Public Works, Economic Adjustment, and Build to Scale, where EDA funds are less than 50% of total outlays (Theodos et al., 2021, p. 10[4]). As such, the EDA's mission is crucial in supporting a bottom-up contribution of local economies to the larger national economy. In particular, the ability of EDDs to leverage limited EDA funds to carry out their projects suggests that there is broader recognition by other funding sources that these projects are credible investments in community economic development.

Figure 3.3. Economic Development Administration funding awarded by programme, annual average, 2010-19



Note: In the figure above, the Technical Assistance category contains the University Center, Local Technical Assistance and National Technical assistance programmes. Build to Scale's annual average covers only 2015-19; the programme did not operate before 2015. Also note that Technical Assistance includes three programs: UCs, Local TA, and National Technical Assistance and Research & Evaluation has two sources of funding.
Source: US Economic Development Administration administrative data and based on Theodos, B. et al. (2021[4]), *History and Programmatic Overview of the Economic Development Administration: EDA Programme Evaluation*, p. 5.

Economic Development Representatives are the main contact point at the agency. They work with all potential applicants as well as EDDs. These representatives can also help to identify other federal agencies with relevant programmes and co-ordinate and expand support. While infrastructure improvement is a critical component of an EDD's economic development strategy, over time sound EDD strategies aim to expand their business development activity to increase the size and scope of the local economy. In particular, since 2010, EDA now emphasises its "Build to Scale" programme which encourages EDDs to create innovative ways to restructure their local economy to make it more productive and competitive in a

changed economic environment. In part, this is an extension of an earlier focus on supporting adaptation to structural shocks, but there is an expanded focus on identifying medium- to long-term opportunities that can lead to significant increases in the size and scope of a local economy. Other notable initiatives from the EDA that support the framework conditions for innovation and entrepreneurship are EDA's University Centers that encourage local economic development actors in building a local strategy in tandem with skills training offers.

A recent report by the Urban Institute (2021[4]) notes that EDA is primarily a grant-making agency, with more than 80% of its resources used for grants (p. 2[4]). These grants are for multiple purposes, with the largest number going towards planning purposes within existing EDDs. One function of EDA is to increase the planning capacity of regions in order to encourage collaboration that can lead to more effective infrastructure investments and greater capacity to expand the regional economy that can benefit all parts of the EDD. The EDA's effectiveness is often challenged by its limited budget and by incentives for individual rural counties to capture as large a share as possible of the benefits from new businesses within their jurisdiction. This tendency for development exclusively within county boundaries is widespread in government programmes that have limited incentives to collaborate. In addition, since county governments are delegated their responsibilities by the 50 state governments, and as some states vary the authority given to counties on the basis of population there may be difficulty among counties in an EDD in implementing some plans. Furthermore, even within counties there can be significant conflicts between the county government and the governments of cities embedded within a county over land use changes, the location of facilities and siting of firms, since these all affect revenue and outlays. This increases the importance of EDA requirements that counties collaborate on their proposals and create a common strategy, because it can lead to a new way of thinking.

The Department of the Interior manages public lands and upholds Federal trust responsibilities to Indian Tribes and Native Alaskans

Land is a key asset for economic development and rural innovation. The Department of the Interior plays a dominant role in the management of federal lands, which are particularly important in states west of the Mississippi River where the Department of the Interior sometimes holds the single largest ownership share of land. Through its Bureau of Reclamation, the Department of the Interior also controls most major water development projects in western states. While this may not have a direct connection to innovation, by controlling how land and water are used this department has a large influence on what development opportunities are viable in roughly half of the country. Finally, the Bureau of Indian Affairs is also part of the Department of the Interior and is responsible for managing the relationships between the federal government and Tribal Governments. It holds land in trust for Tribal Governments and either directly provides or funds most public services, such as schools and hospitals that Tribe members utilise. This gives it considerable influence over economic development activity on reservations, most of which are located in rural areas.

The Small Business Administration provides support for new entrepreneurs and for small businesses seeking to expand

The SBA works to stimulate all forms of business activity and it has several programmes that support innovation. The most significant is the Small Business Innovation Research (SBIR) programme that provides funding for small for-profit enterprises that wish to commercialise an innovative product, process or service. SBA co-ordinates the programme, but 11 federal agencies participate in funding entities whose interests correspond to the mission of that agency. The SBIR is an example of a situation where Congress has explicitly authorised a number of federal agencies to co-ordinate their funding for small business innovation. The SBIR programme is national in scope but has no explicit rural requirements. As a such, in addition to the Department of Agriculture, larger Departments such as Defence, are likely to have rural applicants, but all participating agencies support some rural innovative firms. In addition, the SBA operates

a parallel programme, the Small Business Technology Transfer (STTR) programme that links a for-profit firm with a non-profit research entity that originated the innovation. The firm becomes the entity to commercialise the concept and both partners are engaged in the development between designing the concept to its implementation. Because this programme has a formal research entity as a partner, it can be more challenging for firms in rural areas that are not close to a comprehensive university to identify a partner.

Other core SBA programmes provide funding and other forms of support to all small businesses, including innovative firms. A state-based network of Small Business Development Centers is located in each state with a district office and multiple sites that are housed at universities and community colleges or other entities with an economic development mission. Each site provides support tailored to the local context and can either directly assist firms or connect them with other local institutions that also offer various types of support. The programme is a key resource for entrepreneurs and existing small businesses because it can provide basic business management advice that is appropriate to various industries and help clients with funding proposals. Because it is organised on a state-by-state basis, the location of sites depends to a great extent on where universities and community colleges are available and whether the state has sufficient capacity to expand the network across its entire territory. The SBA provides loan guarantees for eligible borrowers who can then approach a commercial lender for finance. With the guarantee the lender faces less default risk and may be more willing to make a loan, especially for an innovative activity that is hard to assess.

Another key SBA programme that can support innovation is the network of Small Business Investment Corporations (SBICs) that receive matching funds for the SBA to create pools of funds for equity investments in small businesses. The programme is described in more detail in the finance section of the chapter. Once again, the presence of an SBIC in rural areas hinges on there being some sort of local entity, either a bank or a development corporation, that is willing and eligible to obtain authority for the SBA to start an SBIC.

Different types of support for rural innovation

Taken together, the different types of support for rural innovation can be categorised as *direct* and *indirect*, with the latter subdivided as “rural business” and “ancillary” support (Figure 3.4). “*Direct support*” refers to the resources and programmes that specifically target “rural innovation”. An example is the Build to Scale programme offered by EDA’s Office of Innovation and Entrepreneurship. This initiative supports rural innovation and scalable start-ups through the Venture Challenge and Capital Challenge (EDA, 2022[5]). “*Indirect support*” is comprised of rural business support and ancillary opportunities. Rural business support may not be used to promote innovation directly, but these supports are key to the day-to-day activities to kick-start and maintain rural businesses. The Intermediary Relending Program offered by the USDA Rural Business Service is an example. It makes 1 percent low-interest loans to local lenders that re-lend to businesses to improve economic conditions and create jobs in rural areas (USDA, 2022[6]). “*Ancillary support*” programmes include high quality broadband, transportation, and housing that are necessary for businesses to thrive. Given some of the challenges faced by rural communities, “ancillary support” can be just as important as direct and indirect supports. As an example, the Telecommunications Infrastructure Loans & Loan Guarantees offered by the USDA Rural Utilities Service provides financing for the construction, maintenance, improvement and expansion of telephone service and broadband in rural areas (USDA, 2022[7]). Table 3.1. shares examples of direct, indirect and ancillary funding and programmes that support rural innovation across the four federal agencies.

Figure 3.4. Rural innovation support

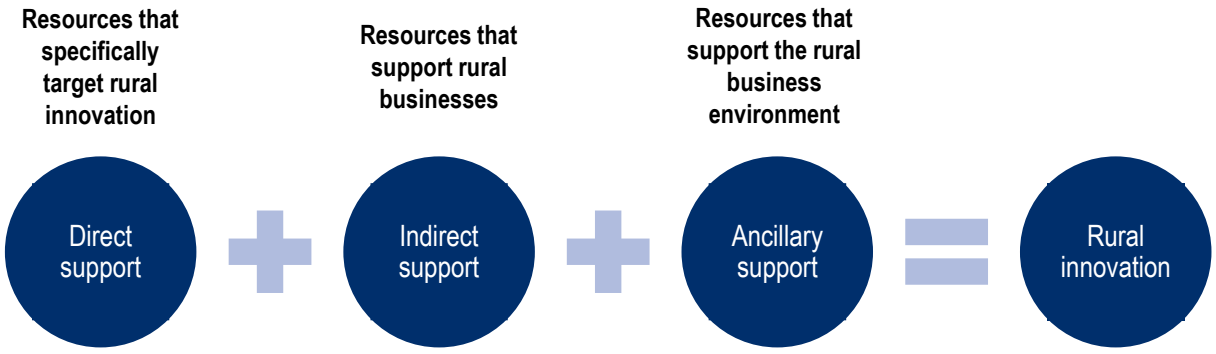


Table 3.1. Different categories of funding and programmes that can support rural innovation

Direct	Indirect	Ancillary
EDA: Regional Innovation Strategies (RIS) awards grants that build regional capacity to translate innovations into jobs through the formation, launch, and growth of early-stage seed capital funds (EDA, 2023[8]).	EDA Revolving Loan Fund Program (RLF) provides small business with access to capital (EDA, 2023[9]).	USDA: Rural Home Loans (Direct Program helps low- and very-low-income applicants buy housing in eligible rural areas (USDA, 2023[10]).
SBA: America's Seed Fund Program – Small Business Innovation Research (SBIR) provides equity-free funding to American small businesses (America's Seed Fund, 2023[11]).	SBA: HUBZone program gives preferential consideration to businesses in underutilised zones (SBA, 2023[12]).	USDA: Community Connect Program helps rural communities extend access where broadband service is least likely to be commercially available (USDA, 2023[13]).
EDA Regional Technology and Innovation Hubs - Planning grants to be awarded to create regional technology hubs focusing on technology development, job creation, and innovation capacity across the United States (EDA, 2023[14])	USDA: OneRD Guarantee Loan Initiative: Business & Industry Loan Guarantees provides loan guarantees to commercial lenders for loans to eligible rural businesses (USDA, 2023[15]).	USDA: Water & Waste Disposal Loan & Grant Program provides funding for clean and reliable drinking water systems, sanitary sewage disposal, sanitary solid waste disposal, and storm water drainage to businesses in eligible rural (USDA, 2023[16]).
EDA: Recompete Pilot Program targets investments in innovation and competitiveness with a regional and place-based focus in communities with large prime age (25-54) employment gaps (EDA, 2023[17]).	USDA: Rural Business Development Grants (RBDG) - supports technical assistance, training, and other activities leading to the development or expansion of small and emerging private businesses in rural areas that have fewer than 50 employees and less than $1 million in gross revenues. (USDA, 2023[18]).	USDA: Rural Economic Development Loan & Grant Program provides funding for rural projects that will create and retain employment in rural areas (USDA, 2023[19]).
USDA: Rural Microentrepreneur Assistance Program provides loans and grants to help microenterprises startup and growth along with training and technical assistance to microloan borrowers and micro entrepreneurs (USDA, 2023[20])	USDA Socially Disadvantaged Groups Grants provide technical assistance to socially disadvantaged groups. Examples of technical assistance include feasibility studies, business plans, strategic planning, and leadership training (USDA, 2023[21]).	USDA: Regional Development Centers link the research and educational outreach capacity of the nation's public universities with communities, local decision-makers, businesses to help address a wide range of development issues (USDA, 2023[22]).

Source: Various EDA, SBA, and USDA websites.

A holistic approach to rural innovation is important

In some mandates, such as those of the EDA, local regional project support is also targeted, without innovativeness being a specific criterion for funding. This means that innovation has to be identified at the local level in the application for direct support. The disadvantage of this approach is that innovation is not inherently privileged as a funding activity, but on the other hand, as long as it can be supported there may be more funds available from larger general-purpose programmes than is the case for pure innovation

support. Additionally, the local applicant may have clearer sense for the role that innovation can play. Maximising the different layers of support would yield more optimal results. However, the case studies conducted for this report reveal the inherent challenges that exist when only some funding streams are/can be engaged, or there are challenges in accessing the resources. The structure of these supports also demonstrate why a holistic approach to rural innovation is important. No matter how much progress is made towards tapping opportunities for startups, if rural infrastructure vulnerabilities and educational challenges are not addressed, progress is limited over the long term. Further, local leaders and citizens are best placed to identify the individual attributes of the rural community and to develop ways to tap into the requisite resources and develop a strategy. This was equally visible in the three case study regions.

Employers and other stakeholders can and should be empowered and incentivised to innovate and introduce change. At the same time, there should be a focus on the infrastructure, skill levels and employability of the workforce. Given the multiple forms and levels of government involved in such initiatives, collaboration is important. For example, the Appalachian Regional Commission (ARC) is a federal-state partnership across 13 states, that invests in rural communities by following a collaborative process. Most federal programmes can fund innovation directly (e.g., direct resources to local firms to invest in innovation and/or their innovative outputs). They can also typically invest in innovative behaviour (e.g., enhancing opportunities, capabilities, and interactions among key actors). This provides a mechanism that can facilitate collaboration across levels of government in ways that improve both programme co-ordination and outcomes and indirect support can also take place through university-firm linkages. Such joint initiatives are one of the strongest drivers of regional innovation across OECD countries. Governments can support these types of linkages through direct supports such as subsidies for joint endeavours or indirect supports such as networking events (see Box 3.3 for examples).

Box 3.3. University-firm linkages for regional innovation: Scotland, Sweden, Portugal

Joint initiatives between universities and firms are one of the strongest drivers of regional innovation across OECD countries. Regions that contain an important share of research universities or laboratories often more easily build connections and generate benefits from spill overs. Governments tend to support these types of linkages through a variety of tools that include subsidies for joint endeavours, networking events, or other kinds of in-kind and programme support.

Interface, Scotland, UK

In Scotland, Interface is a regional knowledge connection hub that is the prime tool for businesses to connect with universities looking to participate in partnerships for R&D. The hub has eight associated centres specialising in different sectors. Unlike initiatives that focus on finding businesses for academics who wish to explore areas of research and development, Interface is focused on helping to connect businesses to universities and finding matches that can support the firm's research and development competitively. The request for the linkage to occur comes from the initiative of the firm. Once an inquiry from a firm is received, a dedicated staff works to match the firm with a university and find funding opportunities for their endeavours.

Academy for Smart Specialisation, Karlstad University and Region Värmland, Sweden

The regional government of Värmland, Sweden leverages university-industry ties through its regional development and smart specialisation strategies that now place the initiative within a local university.

As part of a regional smart specialisation strategy, the regional government integrated the Academy for Smart Specialisation, an applied research facility with tailored training programmes and an interdisciplinary platform, into its region's Research and Innovation Strategy for Smart Specialisation 2015-2020. The initiative promotes new specialisation and skills in the forest-based bioeconomy, ICT,

care, industry 4.0 and tourism with an approach reflecting the sustainability, inclusive growth, and well-being goals of the regional development strategy.

While the success of smart specialisation in Värmland is attributed to the institutional "mobilisation" of regional actors, political agencies, and place-based leadership, it also faced several challenges due to changes in regional governance, and lack of funding and business engagement. To address some of these issues, the region of Värmland is now working on mainstreaming the academy within the local higher education institution at Karlstad University.

Institute for Systems and Computer Engineering, Technology and Science (INESC TEC), Portugal

As one of the most influential research centres in Portugal, INESC TEC brings academics and companies together to contribute to the competitiveness of the Portuguese economy, while improving local societal impacts. INESC TEC has 13 R&D centres in five locations around the northern region in Porto, Vila Real and Braga, and focuses on bringing university and academic knowledge to businesses. Presently, its main sites are in the cities of Porto, Braga and Vila Real. The institute has four R&D clusters that include the Power and Energy Cluster; Industry and Innovation Cluster; the Networked Intelligent Systems Cluster; and the Computer Science Cluster. The institute provides management and organisational services, including legal support and human resource management help; business development services through industry partnerships, technology licensing, funding opportunities and international outreach; and technical support including communications and business informatics. In 2017, INESC TEC was composed of 725 researchers and received 33% of funding from international sources.

Rural innovation in diverse rural regions: opportunities and challenges

As part of the analysis of this report, the OECD undertook three case study visits to Gallup, New Mexico, Pine Bluff, Arkansas and Columbiana, Ohio (see Annex 3.A for additional details on the cases). The distinct nature of the three regions provides a window into the challenges of promoting rural innovation when the underlying factors and characteristics are very different. While the cases do not represent the full diversity of rural regions, they do offer important lessons on the development conditions in rural places and the strategies that can improve economic well-being and impact of rural innovation efforts.

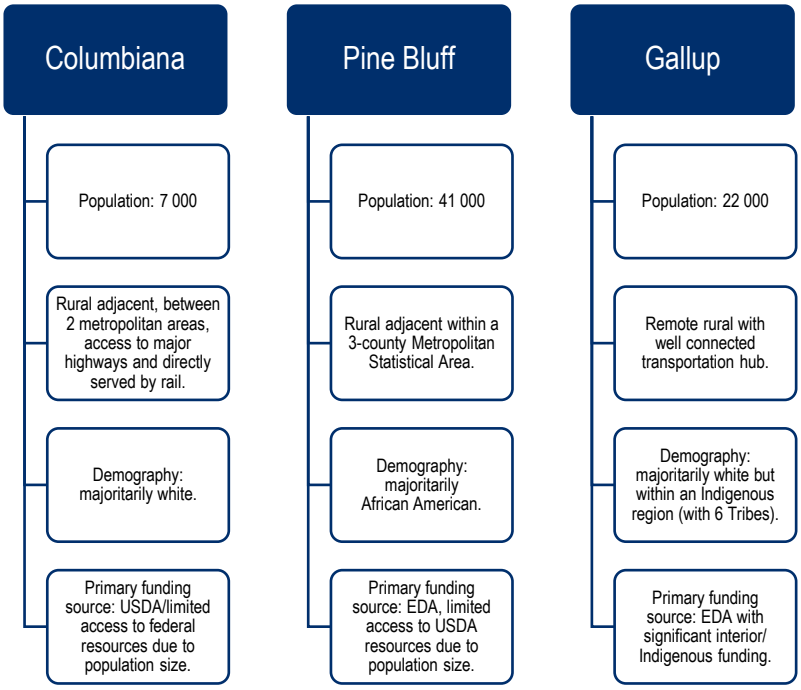
All three cases represent communities that face major development challenges. It is important to recognise that county or city boundaries do not reflect the extent of local labour markets, the local retail trade area or the importance of county governments and state and regional government institutions when it comes to supporting and conditioning local development strategies. In all three cases, the community development strategy has to be seen as incorporating important elements that are managed outside the jurisdiction of the community itself.

Columbiana is the smallest of the three communities with a population of almost 7 000. It is located in Columbiana County in eastern Ohio and is adjacent to both the Canton-Massillon MSA to the west and the Youngstown-Warren-Boardman MSA to the north. The largest nearby city is Youngstown OH (population approximately 60 000), and Columbiana is relatively close to the major cities of Cleveland, OH, and Pittsburgh, PA. The county has the most northern deep-water port on the Ohio River system, which gives it direct access to the Gulf of Mexico via the Ohio and Mississippi rivers.

Pine Bluff is the largest of the three case communities with a population of just over 41 000 in 2020. The city is in Jefferson County in South-Eastern Arkansas, and Jefferson, Cleveland and Lincoln counties form the Pine Bluff MSA with a 2020 population of about 107 000. Jefferson County is one of ten counties in the Southeast Arkansas Economic Development District that is supported by EDA.

The city of Gallup has a population of almost 22 000 and is the county seat of McKinley County, which has a population of just over 71 000. McKinley, San Juan and Cibola counties constitute the Northwest New Mexico Council of Governments, an EDA economic development district. Gallup is a border community to the Navajo Nation, the largest Tribal reservation in the United States, which is also adjacent to the smaller Hopi and Zuni reservations. Notably, a large share of the population of Gallup includes Indigenous people living off-reservation.

Figure 3.5. Case study areas: Columbiana, Pine Bluff and Gallup key characteristics



Importantly, all three places are shaped by particular aspects of federal policy. All are part of the system of, or at least in locations covered by, multi-county development districts known as Economic Development Districts (EDDs), supported by the Economic Development Administration, which makes them eligible for forms of support (EDA, n.d.[3]). Gallup and Pine Bluff have worked closely with EDA and their EDDs. In addition, Columbiana is located within the area supported by the Appalachian Regional Commission (ARC), which is a joint federal-state economic development partnership that serves historically disadvantaged counties in 13 states. Similarly, Pine Bluff is located in the part of Arkansas served by the Delta Regional Authority, which has comparable goals to the ARC, but far fewer resources. Finally, Gallup is a border community to the Navajo Nation and is significantly influenced by how relationships between the Nation and the US federal government evolve.

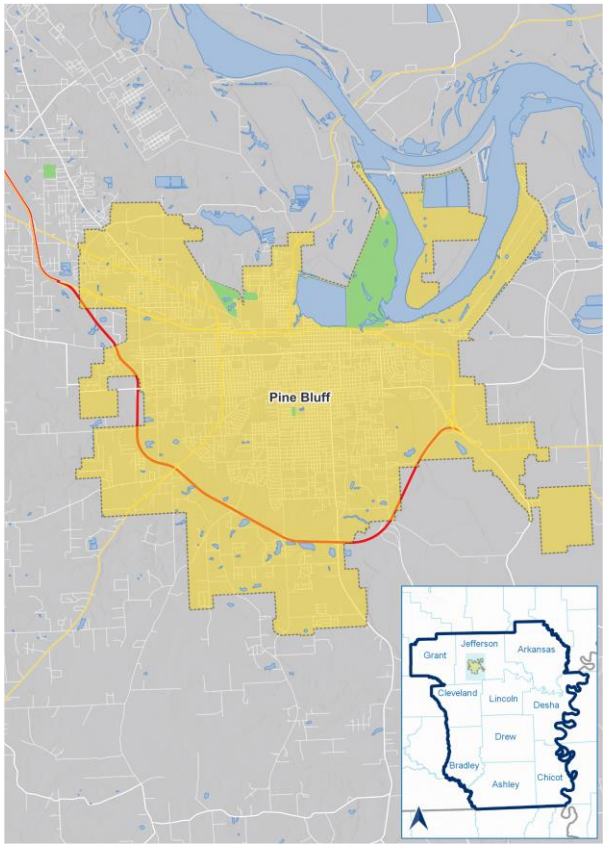
About the regions – Pine Bluff, Gallup, Columbiana

Pine Bluff, Arkansas

Pine Bluff is part of the Southeast Arkansas Economic Development District, Inc. (SEAEDD), which serves ten counties in Southeast Arkansas: Arkansas, Ashley, Bradley, Chicot, Cleveland, Desha, Drew, Grant, Jefferson and Lincoln (see Figure 3.6). The population in Pine Bluff peaked at 57 400 in 1970 and has declined rapidly since 2000. The city is about an hour away from Little Rock, the state capital. There is no air service to Pine Bluff but a network of federal and state highways connects the city to the larger region

and to the national Interstate Highway System. Pine Bluff has experienced a significant economic decline in the last 30 years as much of its economic base has eroded. While agriculture in the Delta region remains important, it offers far less employment than in the past and farm consolidation has reduced the rural population. Forest products, which once was a formidable industry, has also declined, particularly the local pulp and paper mills. Union Pacific no longer has a service depot in the community and employment at the Pine Bluff Armory has dwindled. Much of Pine Bluff's role as a regional retail and service hub has also disappeared as Little Rock has grown and expanded its retail trade area into communities that used to be served by Pine Bluff. Economic decline has led to accelerating population decline, a falling local tax base, decreasing property values, increases in empty and dilapidated housing and retail establishments, and city infrastructure that is both deteriorating and too large for the current size of the community. With economic decline, human and financial capital have left the community as people with higher skills relocated to growing parts of the state and other parts of the country.

Figure 3.6. Pine Bluff: Challenges and strengths



Challenges:

- Dysfunctional local school system.
- High rates of poverty, low levels of employment and low workforce skills.
- Numerous commercial buildings in poor condition in the city centre.
- Identifying a new economic function.
- A deteriorating housing stock and falling home values.

Strengths:

- Two strong higher education institutions fully engaged with local leaders in efforts to rebuild the local economy.
- Investments in revitalising Pine Bluff from a major regional banking organisation.
- A high degree of racial harmony.
- Strong co-operation between elected officials in city and county governments.
- Widespread recognition that major reinvestment is needed.

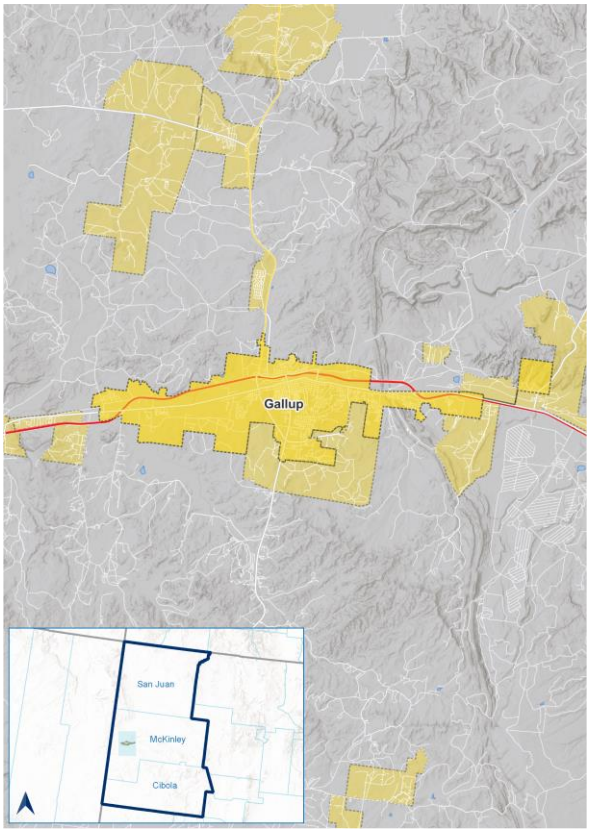
Note: Red line refers to a major highway.
Source: National Association of Development Organizations (NADO).

Gallup, New Mexico

Historically, Gallup was started as a railroad town and quickly became a mining community, including coal and uranium mainly with some oil and gas (see Figure 3.7). Over the past decade, closures in coal-fired powerplants, coal mining, and oil refining accelerated, resulting in a reduction in higher paying jobs and the local tax base. A striking feature of the Gallup area is a "checkerboard" pattern of land ownership. When land rights were assigned by the federal government in this part of New Mexico it was on a section-by-section basis. The result is that private land can be adjoined by native land, federal land and/or state

land. Even federal land is allocated to different agencies. The result is a complex pattern of land ownership outside the city boundaries that impedes development of infrastructure and land development. The Gallup retail trade area extends deeply into the Navajo Nation and the city is a hub for both shopping and government services provided to the people living on a number of reservations. Gallup has also been a major market point for Native crafts, particularly silver jewellery and weaving.

Figure 3.7. Gallup: Challenges and strengths



Challenges:

- Complex pattern of land ownership.
- Private land adjoined by native land, federal land and state land.
- Federal land is allocated to different agencies.
- Weak relationship with USDA.
- Limited higher education opportunity.
- Necessity to collaborate with local Indigenous communities.

Strengths:

- Ideal location for both a maintenance site and for a transhipment hub.
- Major market point for Native crafts.
- Recognises the need for a new economic function.
- Strong relationship with EDA.
- Improved relations with Navajo Nation and other tribes.

Note: Red line refers to a major highway.
Source: National Association of Development Organizations (NADO).

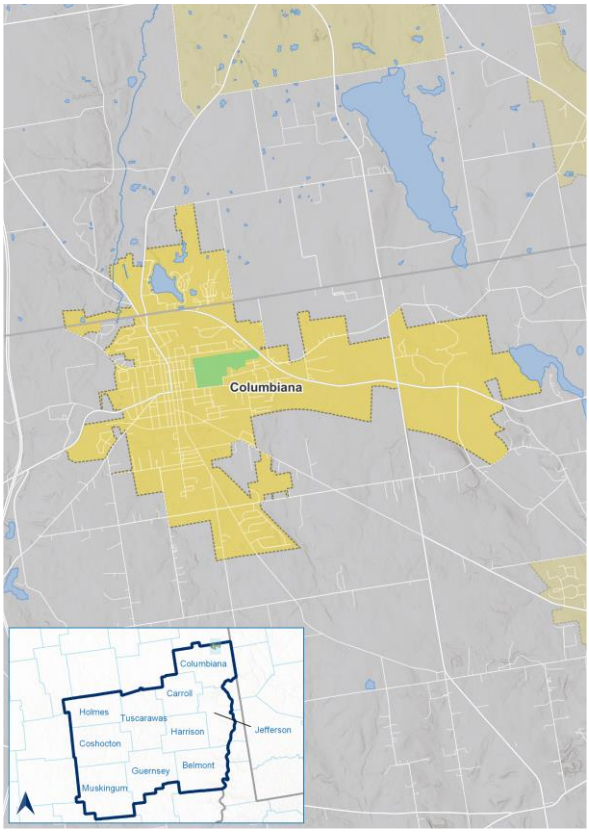
Columbiana, Ohio

Columbiana (city) is covered by two separate EDDs:Ohio Mid-Eastern Governments Association (Columbiana County portion) and Eastgate Regional Council of Governments (Mahoning County portion). Neither of those EDDs is based in Columbiana but are instead based in Cambridge and Youngstown respectively. Columbiana is also part of the Eastern Ohio Development Alliance (EODA) which plays a similar role as an EDD. EODA works to stimulate economic development, infrastructure investment, educational advancement, and a better quality of life. Columbiana has good access to major highways and is directly served by rail, although barge access requires truck transport to port facilities in the south-east corner of the county. Both short stay and day-trip tourism is expanding, and the city has started to attract new residents from the Pittsburgh MSA as houses become more expensive there and possibilities for hybrid work increase. On the other hand, with a population of under 7 000 and close proximity to the larger communities of Boardman, East Liverpool and Salem, Columbiana does not have a strong retail sector. For example, the closest Walmart or Home Depot is in Salem. This means that a large share of retail sales leak out of the community. Similarly, while there are several urgent treatment centres in Columbiana, the

closest hospitals are in Salem and Boardman. Rural communities of similar size in relatively densely-populated regions face a similar situation, but it does limit some sources of economic growth.

The study visits revealed strengths in all three regions. A clear advantage of Columbiana is a strong K-12 school system that has a city school district. Strong local support for schools, both financially and in terms of community engagement, has resulted in better school performance than for proximate peer districts. The lower cost of housing and good local schools is a draw for households. In addition, the city is investing in improving its visual attractiveness through a Main Street revitalisation programme and by creating better parks and recreation facilities. The city is fortunate in having received a large tract of land from the estate of Harvey Firestone to establish a multi-purpose park near one of the new housing developments.

Figure 3.8. Columbiana: Challenges and strengths



Challenges:

- Weak internal retail sector.
- Proximity to hospitals.
- Development of the core labour force.
- Build bridges beyond physical boundaries.
- Limited opportunity to collaborate with adjacent governments that have comparable capability.
- Too small to reach next stage of growth alone.

Strengths:

- Strong K-12 school system.
- Innovative local government initiatives.
- Diversified economy with strong local firms.
- Sufficient "free capital" for flexible investments.
- High level of community engagement with the K-12 system.
- Strong partnership with local developers.
- Innovative local regulations to encourage change.
- Local theatre as a point of cohesion.
- Makes strong use of USDA funds.

Source: National Association of Development Organizations (NADO).

Pine Bluff has several key strengths that are being mobilised as part of a major redevelopment effort. These include: two strong higher education institutions, the University of Arkansas at Pine Bluff (UAPB) and Southeast Arkansas College (SEARK), that are fully engaged with local leaders in efforts to rebuild the local economy. Simmons Bank, a major regional banking organisation, is the only large commercial business in the city's core and has made a number of large investments in revitalising Pine Bluff. While part of this support can be explained by the bank fulfilling its Community Reinvestment Act (CRA) obligations, the level of support goes well beyond the amount CRA would require.

Gallup is roughly an 11-hour drive from the ports of Los Angeles and Long Beach. After 11 hours of driving, commercial trucks are required to stop for a rest period, which makes Gallup an ideal location for both a maintenance site and a transhipment hub. With a logistics hub, there is potential to attract light manufacturing firms, which would add another dimension to the city's economic base.

Innovation as part of rural community economic development

All three communities are dealing with economic decline that has transformed rural places that were once prosperous into ones facing a much-diminished economic role that led to reduced employment and lower earned income. The magnitude of the shock varies considerably by community, as has their ability to respond in a proactive way. Recognising that the past could not be restored was not easy, but it may have motivated the search for new roles and ways to support them. As a result of the search, there was clear evidence of innovation. Innovation took place in existing businesses that looked for new products and production processes. It was evident in the efforts of individuals who became new entrepreneurs as a way to improve their own livelihood. Moreover, the process has clearly improved well-being in each community. It was also evident at local government levels where new core economic functions for the community were identified to replace the prior one which is now defunct. Most importantly, innovation was evident in the creation of both new local associations that formed to help support economic revitalisation and in new partnerships among groups who agreed to collaborate on introducing new activities or in delivering services in a new and innovative ways, such as the partnership between the Navajo Nation and the City of Gallup to develop a new hospital to serve the entire community.

Prominent role for developers and the private sector

In all three cases, efforts to restore economic vitality have been supported by a private sector partner, but once again the level of support varies significantly from place to place. Similarly, the role of local government, in particular the surrounding county, in the development strategy varies considerably. Columbiana adopted a city manager form of government which is unusual in smaller cities where the common form is to have a mayor and a city council that share administrative responsibilities. A clear benefit to having a long-tenured city manager is their ability to master grant applications. They also know which entities can be approached for a particular source of funding. They can follow through both in implementation and on reporting results to the grant provider. Many small rural communities must rely entirely on grant programmes for financial support because their fiscal capacity is so small that it is all spent on required current outlays. With no internal investment funds they face two challenges. The first is they can only obtain funds to invest in projects that grant makers are currently prepared to fund, which limits their activity. Second, since most rural places are in this situation, competition for these funds is intense and many applicants do not receive funding. Conversely, because Columbiana has unencumbered funds it can apply for “cost-shared” programmes, which have fewer applicants. Moreover, they are also preferred by many grant providers since they both leverage the grant provider’s money and have inherently lower risk because the applicant also has invested money into the endeavour. This has given the city the opportunity to make both more investments and a broader range of investment than is common in rural America.

In many communities, relationships between local government and developers are problematic. In Columbiana, there is a strong partnership between the local government and the private developer who is building housing and retail development on the old Firestone Farm. This major development is creating a new retail and recreational complex as well as new housing. A crucial element in Gallup's development vision is a long-term development agreement with Gallup Land Partners. Gallup lacks access to sufficient land to develop its own facilities, and as a small city with a limited budget it could not afford the capital outlays for development even if it had the land. By partnering with a major land development company Gallup can achieve its ambition and the company can more readily convert raw land into something more valuable than it could if it were to try to do it without the support of the local government. Importantly, the Greater Gallup Economic Development Corporation (GGEDC), which is charged with economic development for the area, acted as an intermediary in developing and implementing the relationship. The Go Forward Pine Bluff (GFPB) development approach is the central part of efforts to revitalise the community. It can be seen as an innovative response to a systemic redevelopment challenge, and while it

has yet to demonstrate its success it already provides useful examples of how to undertake a comprehensive approach to renewal.

Major differences in what can be accomplished due to size authority and fiscal capacity

Because the population of the three places differs, as does the authority and fiscal capacity granted to cities by their respective state governments, there are major differences in what each place can accomplish internally. As an example, despite all three places seeing improved educational attainment as a central part of their development strategy, the range of local education institutions in the respective communities differs considerably, as does the ability of each community to influence how it operates. Public schools in and around Pine Bluff are no longer providing adequate education to students. Conditions within Pine Bluff deteriorated to the point that the State of Arkansas assumed control of the school system. By contrast, in Columbiana, both public officials and business leaders are engaged with the local schools, including the primary school (elementary schools) in an effort to create an environment where students see Columbiana as a place where they might like to live as adults and to provide students with a sense of what employment opportunities are available locally. In Gallup, the mission of Navajo Technical University is to provide an opportunity for Tribal youth to gain a university degree in a STEM-related discipline. The Center for Advanced Manufacturing was created to provide a more specific and job-focused experience for students in additive metal manufacturing. Because there is varying experience in manufacturing on the Navajo Nation it was felt that the best opportunity for success would be in a new field where leading regions have yet to emerge.

Role of the federal government varied across the three cases

The role of the federal government was also clear. Federal agencies, particularly EDA, SBA and USDA, have provided multiple forms of support in all three cases. While funding for multiple projects over multiple years is the most obvious form of support, it is not the only one. In all three places, federal agencies also provided important technical support and were generally able to find ways to facilitate co-ordination of their respective financial and planning support in order to magnify its impact. Federal support for the creation of new community governance capacities both in government and in civil society, while harder to assess, were also clearly instrumental in bringing about change. In all three communities, but especially Gallup, the challenges inherent in intergovernmental co-ordination were apparent. While federal officials with local responsibility were able to develop informal ways to collaborate, their capacity to do larger things was limited by the need to get “head office” approval. This was particularly apparent in Gallup where Tribal government has a distinct relationship with the federal government through the Bureau of Indian Affairs, which is largely unconnected to other federal departments and agencies.

High level of local government innovation

A striking feature of the three places was the high level of innovation by local governments and by civil society. Local governments are challenged to innovate because they face problems in providing the services the population desires in a conventional way, or because a novel source of revenue may be the only way they can increase their budget. Similarly, volunteers self-organise to provide services that are not available from firms or government, but which improve quality of life for the entire community. These non-traditional innovations can help create an environment where firms also innovate because they see creative solutions being developed around them and because the quality of the community is improving. This, in turn, may stimulate a sense that the returns on firm innovation may be better than in the past.

Some of the innovations described in the case studies, whether made by firms, governments or organisations are novel in the sense that they are uncommon enough to be classified as innovative in any context. Gallup’s fully integrated development partnership with the private developer, Gallup Land Partners (GLP) (see Box 3.4) is a major innovation in how a city can form a public private partnership to carry out a

large-scale community redevelopment programme. GLP provides land and financial resources the City could not obtain, while the city provides legal and regulatory support, access to federal and state funding and public facilities that complement GLP's investments.

Pine Bluff's entrepreneurial coaching programme, which focuses on encouraging female-owned home-based business startups, is combined with a programme to provide exposure to computers to their young children in a common facility, or in Columbiana, Humtown Product's ongoing partnership with Youngstown State University to develop new applications for additive manufacturing using 3-D sand printers are also examples of novel and innovative approaches. Note that an expansive definition of innovation is being applied which is consistent with the current OECD understanding of the term. Other innovations, while perhaps not as novel, are still uncommon in the rural contexts in which they are applied. Near Gallup, Sacred Winds Communication is leveraging fixed-wireless broadband on the Navajo Nation to connect widely dispersed settlements, which is a novel way to apply a well-known but little-used technology that suits the specific situation. The City of Columbiana has forgone property tax on new homes for 15 years as a way to stimulate development and attract new residents. In Pine Bluff, the Go Forward Pine Bluff model shows how to develop a community engagement process driven by civil society that can mobilise a large share of the population to identify a new development strategy that received a high level of support from the electorate when placed on the ballot. This latter group of examples is important because it demonstrates an ability to find a new solution to an ongoing problem, which is the hallmark of user innovation.

Box 3.4. Redevelopment approach – Gallup, New Mexico

Gallup Land Partners (GLP) was created in 2013 to manage the development of a roughly 26 000-acre parcel of land that is located north of the city of Gallup. This parcel is unique because it consists mainly of contiguous section blocks and was previously owned by a coal mining company and is adjacent to both the BNSF mainline and I-40. GLP has three operating subsidiaries Gallup Energy Logistics Park (GELP), GLP Homes and GLP Commercial, and has developed a master plan for the property that involves a combination of transport related infrastructure, residential development and commercial development.

Several things are unique about GLP's activity. The first is the scale of the investment in a small rural community like Gallup. The second is the integration of residential, commercial and industrial components and all the related infrastructure. The third is the high degree of integration of GLPs activity with the city of Gallup's development objectives. By partnering over an extended period of time, GLP and the city are able to better achieve both entities' objectives. GLP provides land and financial resources the City could not obtain, while the city provides legal and regulatory support, access to federal and state funding and public facilities that complement GLP's investments.

GLP's development plan is connected to Gallup's ambition to be a logistics hub. A new 2 500-acre industrial park designed as a logistics hub has been created that includes a 11 000-foot rail loop that connects to the BNSF mainline with 365 acres certified by BNSF as "rail served and shovel ready". The industrial park is already being used for loading and off-loading trains and additional rail lines are being considered. In 2022, a new four -lane road built with GLP and city -supported funds connected the industrial park to major roads in Gallup. The road was intentionally designed to be used for testing autonomous commercial vehicles with the intent of marketing Gallup as a test site for driverless commercial trucks. The city and GLP also recently constructed a new recreation area, The High Desert Trail System, that is partially located on GLP land that expands the number of bike and hiking trails in the community. While new housing development has not started on the land north of the city, GLP Homes is involved in housing developments in other parts of Gallup.

Strong commitment to enhancing workforce skills

To be successfully implemented, innovation generally leads to new workforce skill requirements. It is important to highlight that in all three places there is a strong local commitment to enhancing workforce skills through efforts to improve the local education system, particularly by better connecting it to local employers' skill needs. In Pine Bluff, Southeast Arkansas College has partnered with People Source, a public benefit corporation that provides training and staffing services for private companies. People Source will locate on the college campus and is expected to employ about 250 people, some of whom will be students enrolled at the college. In Columbiana, local firms are engaging with students before they get to high school to identify high-paying opportunities in skilled trades, and the high school offers an entrepreneurship class that engages students with a firm or government agency that has a problem requiring an innovative solution. The students then devise their own solution to the challenge and present it to the firm or agency. In the Gallup area, the Navajo Technical University has a programme to train technicians to work on machinery used in additive manufacturing. The programme is linked to several research-intensive universities outside the region conducting advanced research on additive manufacturing and students at Navajo Tech work with these researchers to develop cutting-edge technical skills that can allow them to get jobs as research technicians.

Finally, other actions have been successfully implemented in the past, such as: improving the appearance of Main Street, strengthening co-operation between city and county governments, constructing a generic incubator building or building cash reserves to allow applications for "matching grants" instead of 100% donations. Less common is the ability to assemble a coherent package of these good practices and to sustain it over time. While it is perhaps a stretch to describe places that do this as innovative, it is also true that good government and good governance practices in rural areas can be atypical. In many successful rural communities, it is this combination of a few novel or atypical innovative actions combined with a package of standard good practices that leads to a successful rural economic development initiative. Some form of national support for innovation played a significant role in many cases. Even though there is no comprehensive support system for innovation in the United States, the large number of individual programmes provided by a range of federal agencies creates an environment where individual firms, organisations and governments can construct a package of support that enables them to achieve their goals. In a sense, this process is also a form of innovation driven by resourcefulness.

Maximising opportunities and mitigating challenges to rural innovation

Integrating geographic constraints into rural policy

Public policy is largely shaped around administrative units – nations, states and provinces, and at the lowest level, counties, townships and other units of local government. This is almost a necessary consequence of policy being the prerogative of government, with specific layers of government having certain capabilities and resources and local governments deriving their powers from higher level governments. But administrative units, especially at the local level, may not correspond to how a particular local economy function. A useful way to think of a local economy is as a local labour market. However, this is how the Office of Management and Budget defines metropolitan areas in the United States by using county level worker commuting patterns to construct multi-county functional economic areas.

Nevertheless, the idea of local labour markets is rarely adopted in thinking about rural economic development. While counties are the basic building block for federal rural development activity, a single county may not be the best unit for economic development policy. In some cases, a rural county in the United States can contain multiple functional economic regions, especially in counties that are geographically vast and where population densities are low. Conversely, rural counties east of the Mississippi river can be too small to be a functional economic unit and multi-county aggregations make

more sense as economic building blocks. EDA's Economic Development Districts (EDDs) best reflect this idea because they are multi-county aggregations that are seen as a better way to first construct a set of shared infrastructure and then to collaborate on economic development. This provides benefits to all members of the EDD. For example, although a factory will locate in only one county in the EDD, surrounding counties can gain from increased employment opportunities for their residents at the factory, since no individual county has an adequate labour force to meet the firm's needs.

However, in geographically large counties with dispersed populations, as in New Mexico, EDDs may also have to work at a sub-county level, because the potential economic linkages take place in a smaller geographic setting. Gallup provides a useful example in this regard. The development of the city hinges on collaborating with other entities, including adjacent tribal governments that have a different form of local government, but the three-county EDD that Gallup is part of is too big to correspond to its functional economic area. Conversely, the administrative area of the city of Columbiana, Ohio spans two counties, which requires it to co-operate with both of them.

Importantly, the appropriate geography for rural economic development may not correspond to the best geography for providing public and private services. In the case of public service delivery there is always a crucial trade-off between having larger entities that can capture potential economies of scale to reduce unit service costs and recognising that a large service territory results in significant travel costs from where people live to the facility. In some cases, government may incur a portion of these costs, as in the case for ambulance services or school buses, and this may lead to a balancing of costs. In other cases, travel costs are mainly born by users, as is the case for non-emergency health care or accessing local government offices. In this latter instance it may be more likely that government will recognise the benefits of a larger unit with a bigger service area but tend to downplay the adverse consequences for users.

Unfortunately, this suggests that there is no best single unit of geography for all forms of rural development. Because rural areas encompass a mix of "for-profit" firms, various local governments and a variety of non-profit organisations that play a large role in both the economy and in civil society, a correspondingly large number of overlapping but non-congruent spatial service areas will occur. Fortunately, many rural societies recognise this complexity as part of their way of life and can bridge the gaps between different elements of their life. This is facilitated by each community being relatively small, so people know where to go for a particular good or service. Where problems arise is at higher policy levels when government wants to adopt consistent geographic boundaries and approaches to ensure that all recipients are treated identically.

For example, USDA is often criticised because it does not have a consistent eligibility population for its rural development programmes. However, some programmes may be more appropriately focused only on smaller pockets of the population, while others are justifiably appropriate for larger places. It is this type of flexibility across programmes that is necessary to allow a more appropriate policy response to rural development challenges.

Co-ordinating to support rural innovation and ensure equity

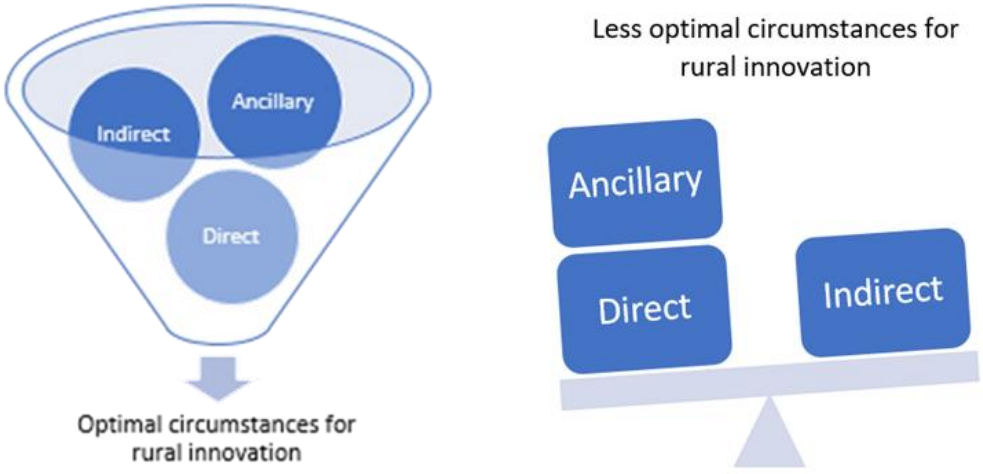
Co-ordinating to consider all the factors needed to support rural innovation

Each case study region has showcased more than just business innovation. Identifying new sources of economic activity to jumpstart economic growth and improve the well-being of the community was the core aim for all. Arguably, a higher degree of co-ordination is needed in this circumstance because achieving the goal depends on all the variables working together at the local level. For example, a decision made by one agency could have consequences not just for the community but for the programmes of other agencies, which obviously makes co-ordination imperative. Also programmes that may not seem to be directly significant for innovation in a rural community may have indirect impact on the effectiveness of programmes that directly affect rural innovation. Further, in rural areas co-ordination is often challenged

by limited local capacity and/or the fact that decision-making by government takes place far from any rural place in structures where conditions and needs of that rural place are unknown. In Pine Bluff, it is more challenging to encourage and build an entrepreneurship culture when the public educational system consistently underperforms. Likewise, it was much more difficult in Gallup to build and galvanize new businesses when land is cumbersome to access for development. Of course, there are workarounds, and this is evident in the role land developers played in Gallup.

Figure 3.9 suggests that co-ordination has to go beyond simply linking the programmes that obviously impact innovation in a rural community if the full benefits of government support is to be achieved. In other words, no matter how much progress is made towards tapping direct or indirect opportunities, if ancillary factors are not addressed, they could render any form of progress shallow. The optimal path to increase rural innovation is based upon local strategies that are grounded in local competences and assets. But it is crucial to recognise that these strategies have to be grounded in an understanding of the external environment in which the rural region is embedded. The discussions in the case study regions underscore the importance of exploiting rural innovation opportunities in a manner that also addresses ancillary factors. A place-based lens on the nature of interventions and how they connect to broader strategic visions of community and economic development is important.

Figure 3.9. Improving co-ordination for rural innovation



The United States is a federal country with three levels of decentralised government authorities that include the national, state, and municipal governments. When tribal lands are considered there is a distinct fourth level with limited formal ties to the other three. As with all federal OECD governments, a high level of decentralisation allows for better tailored responses to local markets. However, decentralisation of itself is not enough, as evidenced by the case studies. The ability to make full use of the direct, indirect, and ancillary support streams requires knowledge of what is available, how it can be used, and the ability to access the resources. There are a multitude of tools to help. It may be centralised through the treasury, or central budget offices, through whole-of-government priorities, joint mandates (Peters, 2018[23]) or through a central co-ordination unit for vertical co-ordination or decentralised non-hierarchical systems (Bakvis and Brown, 2010[24]). Standing commissions and intergovernmental consultation boards are other frequently observed co-ordination mechanisms. These mechanisms can consider the scale of intervention, the frequent duplication and overlapping in competences, a lack of human and technical capacities, unfunded mandates, territorial disparities, and increased competition for resources. One recent example was setup by the Biden-Harris Administration, the Rural Partners Network is an alliance of federal agencies and civic partners working to expand rural prosperity through job creation, infrastructure development and community improvement. The networks brings “boots-to-the-ground” by designating community liaisons to

work to simplify access to information for rural communities. They are established as a collaboration of 27 agencies and the White House in an effort to improve access to government resources, staffing and tools, build awareness of rural issues and focus on building rural strategies. It is currently going through the second pilot programme in 14 counties and 10 states.

Co-ordinating to ensure equity for marginalised populations in rural innovation

Innovation is typically understood as a way to increase productivity which strengthens both the innovative firm and regional competitiveness, or as a method to introduce new goods and services to a market, as discussed in Chapter 2. In both cases, while innovative firms benefit, so does society collectively, but there can also be losers. This is best understood in Schumpeter's notion of innovation as a process of creative destruction, where incumbent firms and their workers are displaced by new innovations (Caballero, 2008[25]). In the three case studies, current pressure to innovate was in part created by the loss of an earlier economic specialisation – fossil energy in Gallup; timber processing and cotton production in Pine Bluff; and a decline of the traditional steel casting industry in Columbiana. In Columbiana, traditional skills in pattern making have been repurposed in new ways by introducing modern additive manufacturing. In Gallup a new economic function – intermodal logistics is being created. In Pine Bluff a new economic function that can provide a new source of employment has yet to be determined. While Columbiana is furthest along in the process of redefining its economic role, even there it is clear that there will be both fewer firms, new workforce skills and less direct employment involved in the new production regime.

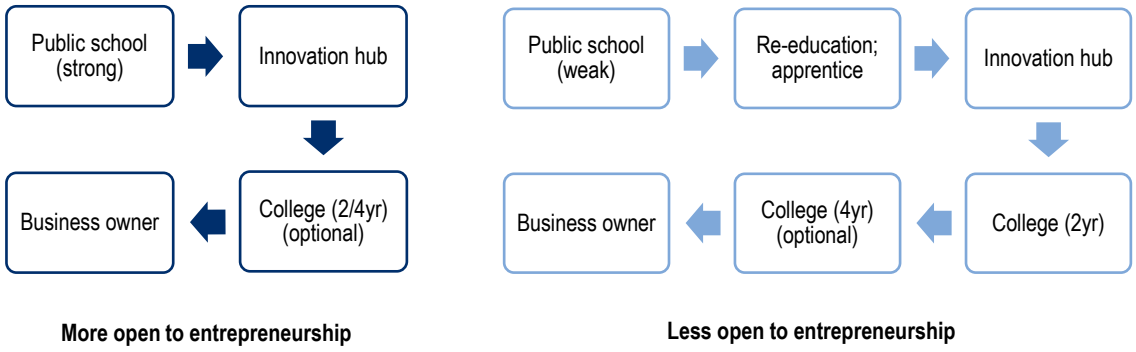
Restoring economic vitality to rural areas can be challenging when places are systematically disadvantaged and populations within regions face disproportionate barriers associated with living in entrenched poverty or systematic discrimination. Thus, even when innovation leads to new economic opportunity, only some people in the community may benefit. In rural communities where employment opportunities that provide stable jobs with a living wage are limited and some groups are trapped in persistent poverty, even a rapid transition to a new economic function driven by innovation may not improve conditions for most community members. This is certainly relevant in the case of Pine Bluff where they are seeking to foster entrepreneurial activity that can take advantage of local resources. This suggests that only focusing on supporting firm level innovation is insufficient to ensure broad based community development. Moreover, even where firms try to innovate to be successful, they need a supportive environment that provides a range of workforce skills, access to necessary inputs, sound infrastructure and strong financial institutions.

In rural areas it is often necessary to undertake crucial social innovations to spark interest in becoming an entrepreneur (Figure 3.10). A strong public school system provides essential support, especially if it incorporates entrepreneurial experiences in the curriculum, as seen in Columbiana. However, where people have limited relationships with individuals who are small business owners it can be hard for them to imagine themselves as entrepreneurs. And, in communities located in regions where there is persistent poverty the problem is further compounded by limited opportunities for work of any type that can reinforce a belief that opportunity does not exist here.

In places like Pine Bluff where economic and social decay have weakened core institutions like the schools and social cohesion, it is essential to first find ways to provide better public services to support nascent entrepreneurs. In Gallup, finding new ways to connect the development needs and aspirations of both the Indigenous and non-Indigenous communities has improved prospects for introducing new economic opportunities that benefit more local people. Conversely, in Columbiana, the small size of the community, its strong local schools and the high visibility of successful family-owned businesses create a supportive environment for new entrepreneurs. In all three communities, implementing innovative new economic functions requires—as a bare minimum—developing a new set of skills in the local labour force, which in turn requires the community to develop new innovative ways of improving schools and of developing new workforce training methods. Successful implementation requires the rebuilding of civic trust and improving

local governance to better fit changing social, policy and economic conditions. In short, innovation in both government and civil society is necessary to support conventional firm-based innovation.

Figure 3.10. Degrees of openness to entrepreneurship



Education institutions can contribute to improved human capital formation in rural areas by widening access to higher education, better matching labour force skills to employer needs, attracting new people with particular skills to the region, and by generally upgrading the skills of the local population (OECD, 2014[26]). But Pine Bluff faces two challenges. The first reflects the fact that the local labour market is geographically larger than would ideally be the case, which leads to high commuting costs for workers that can be an impediment to participation, while additionally much of the current workforce has limited experience with entrepreneurship and does not see self-employment as a viable option. The second challenge is the difficulty of improving this situation. Improving the education system would allow workers to be more productive and command higher wages, which in turn would reduce the negative impact of high commuting costs on labour force participation. Increasing awareness of entrepreneurial possibilities can also be addressed through school programmes, such as Junior Achievement, that expose students to business opportunities, and entrepreneurship classes, such as the one offered in Columbiana. The absence of this support is due in large part to a public education system that has underperformed for years, and in many respects still continues to do so. For example, in 2018 the Pine Bluff School District was placed under state control due to fiscal distress with five schools categorised as failing (NADG, 2018[27]). While there are training facilities such as colleges, technical schools and other institutions where skills can be acquired, arguably more support is needed when the public school is failing to provide the basic foundation of learning.

Inclusivity is a multi-dimensional challenge for the delivery of all forms of government support mechanisms. As such, some federal programmes make deliberate efforts to address equity challenges. EDA has taken many steps towards integrating diversity and equity in their programme delivery. They span from focusing on populations and geographies that have traditionally been underserved (e.g., minorities, rural areas, tribal lands and areas mired in poverty, as defined in Chapter 2) and specific programmes to address equity head on. Congress requires that EDA use10% of its Public Works and Build to Scale appropriations to fund investments in priority areas that have been identified as persistently poor, meaning counties that have a poverty rate of at least 20% for the last 30 years (United States Congress, 2020[28]). The requirement, also known as the 10-20-30 rule, streamlines a focus on providing fair and impartial opportunities by ensuring support is reaching systematically disadvantaged areas across all investment opportunities. USDA has engaged in a comprehensive review of its policies, processes, and programmes to determine how it can advance equity throughout the Department. Along with this review, the Department has taken meaningful steps to advance equity considerations in their programmes. For example, the Rural Development Agency prioritises applications that can receive priority points if their projects are located in socially vulnerable communities, which are defined as communities that score at 0.75 or above on the Social Vulnerability Index (developed by the Centers for Disease Control and Prevention).

However, funding requirements alone do not address some of the core challenges in persistently poor areas, where access to the basic building blocks of a thriving community may be lacking and local economic development organisations and community organisations may benefit from capacity building opportunities. To respond to this, in 2022, as part of the funds received from the Coronavirus Aid, Relief, and Economic Security (CARES) Act, EDA granted USD 5.5 million to the *New Growth Innovation Network (NGIN)* to design and launch a new initiative, *Equity Impact Investments* (EDA, n.d.[3]) that will deliver three-year, capacity-building programmes to 120 organisations. NGIN, an independent non-profit organisation that supports economic development practitioners in advancing inclusive economic growth and closing structural opportunity gaps (in partnership with the Local Initiatives Support Corporation (LISC) and the International Economic Development Council (IEDC)) are creating a programme focused on development and delivery of training and toolkits that disseminate knowledge of economic development best practices in serving underrepresented populations. The programme has already reached 60 community-based organisations and 60 economic development organisations that serve underrepresented populations.

Similarly, having recognised the need to do more, the USDA established the *Equity Action Plan* in light of an executive order to advance racial equity and underserved communities. The action plan outlines a strategy to advance equity by:

- Partnering with trusted technical assistance providers to expand access for underserved communities.
- Reducing barriers that prevent underserved producers from accessing USDA farm programmes.
- Expand equitable assistance to USDA nutrition programmes.
- Increase the share of overall USDA infrastructure investments that benefit underserved rural and Tribal communities.
- Increase fair and equitable opportunities for small, disadvantaged businesses (SDBs).
- Uphold federal trust and treaty responsibilities to Indian Tribes.
- Institutionalise civil rights and equity as part of the DNA and culture of USDA.

Box 3.5. Programmes and initiatives for Equity in Entrepreneurship support services in Canada

Most of the Government of Canada's departments and agencies have a mandate to support diverse and inclusive economic growth across the country. The Canadian constitution has an *equalization clause* which requires the Government of Canada to provide financial assistance to provinces with weak levels of per capita fiscal capacity relative to the average for all provinces. Provinces with low fiscal capacity due to economic weakness are seen to be unable to provide citizens in their jurisdiction with appropriate levels of public services. As a result, access to basic public services among the provinces of Canada is relatively uniform, although major gaps exist between rural and urban regions in all provinces. But improving public service delivery does little to increase economic capacity and major gaps in earnings and employment continue to exist both among provinces and between rural and urban regions.

In addition to this, there are targeted initiatives and departments and agencies that invest in and prioritise projects that are led by and benefit underrepresented groups. A few examples of this include projects that prioritise supporting women, Black and Indigenous entrepreneurs as well as language minority communities. Lastly, supporting an inclusive recovery was a key pillar of the government's COVID-19 relief and recovery programming.

The Canadian **Department for Innovation, Science and Economic Development (ISED)** estimates that by ensuring the full and equal participation of women in the economy, Canada could add up to CAD 150 billion in gross domestic product (GDP). With only 17% of Canadian small and medium sized

businesses owned by women, the government of Canada developed a Women Entrepreneurship Strategy with CAD 6 billion in investments and commitments to encourage access to finance, talent, networks and expertise. It includes an Inclusive Women Venture Capital Initiative, a Women Entrepreneurship Loan Fund, an Ecosystem Fund and the Women Entrepreneurship Knowledge Hub. Other similar programmes exist in the form of a Women Entrepreneur programme administered by Farm Credit Canada, a Women in Technology Venture Fund, a Women Entrepreneurs programme administered by the Business Development Bank of Canada and a Women in Trade programme administered by Export Development Canada.

Regional development agencies (RDAs) in Canada, such as ACOA, FedDev Ontario, PrairiesCan, PacifiCan and provinces provide specific support, consulting and advisory services to women. They deliver two aspects of the WES:

- The Women's Entrepreneurship Loan Fund helps ensure that more women entrepreneurs have the tools and financing they need to succeed. The program provides loans of up to $50,000 to women entrepreneurs, particularly for start-ups, underrepresented groups, and sole proprietorships which may experience more difficulty in accessing financing.
- The WES Ecosystem Fund, a National and Regional fund, is a four-year programme that runs until March 2023. Notably, the fund:
  - Provides non-repayable contributions to non-profit partners that deliver business services and support programming to women entrepreneurs.
  - Includes an additional top-up to support women entrepreneurs to navigate the COVID-19 crisis.

Through WES, the RDAs seek to increase the number of businesses owned and managed by women and strengthen capacity within the entrepreneurship ecosystem while closing gaps in service for women entrepreneurs.

The Women's Enterprise Initiative is an example of a distinct Canadian regional programme that addresses the challenges that women entrepreneurs face. The initiative, in partnership with PrairiesCan and PacifiCan, helps women entrepreneurs start, scale up and grow their businesses. There is a Women's Enterprise Initiative organisation in each of the four Canadian western provinces (Alberta, British Columbia, Manitoba, Saskatchewan). These non-profit organisations provide a variety of unique resources for women entrepreneurs, including business advisory services, training, networking opportunities, loans and referrals to complementary services.

The Black Entrepreneurship Program (BEP) (Government of Canada, 2023[29]), a partnership between the Government of Canada's Canadian Department for Innovation, Science and Economic Development (ISED), Black-led business organisations, and financial institutions, provides opportunities targeted towards supporting Black Canadian entrepreneurs. The programme has an investment of up to CAD 265 million over four years, to help Black Canadian business owners and entrepreneurs build and grow their businesses. It has three main components including a Black entrepreneurship loan fund, a National Ecosystem Fund, and a Knowledge Sharing Hub that conducts research on the challenges for Black entrepreneurship in Canada, led by Carleton University's School of Business and Dream Legacy Foundation.

Launched in 2020, the programme includes:

- up to CAD 53 million to develop and implement the new National Ecosystem Fund. The fund helps Black business owners and entrepreneurs access funding and capital, mentorship, financial planning services, and business training.
- up to CAD 33.3 million in support through the new Black Entrepreneurship Loan Fund that provides loans of between CAD 25,000 and CAD 250,000 for Black business owners and

entrepreneurs. The Government of Canada is also partnering with financial institutions, including RBC, BMO Financial Group, Scotiabank, CIBC, National Bank, TD, Vancity, and Alterna Savings, to make up to CAD 128 million available in additional lending support.

- up to CAD 6.5 million to create and sustain a new Black Entrepreneurship Knowledge Hub that will collect data on the state of Black entrepreneurship in Canada and help identify Black entrepreneurs' barriers to success as well as opportunities for growth.

The Economic Development Initiative (Government of Canada, 2023[30]) is an initiative under the responsibility of Innovation, Science and Economic Development (ISED) that supports development for official language minority communities. It is a partnership between federal agencies including Atlantic Canada Opportunities Agency (ACOA); Canada Economic Development for Quebec Region (CED); Canadian Northern Economic Development Agency (CanNor); Prairies Economic Development Canada (PrairiesCan); Pacific Economic Development Canada (PacificCan); Federal Economic Development Agency for Southern Ontario (FedDev Ontario); Federal Economic Development Initiative for Northern Ontario (FedNor) as a part of Innovation, Science and Economic Development (ISED). It provides financial support to projects that encourage economic diversification, business development, innovation, partnerships and increased support for small and medium sized enterprises in official language minority communities (OLMCs). Through the EDI, agencies can invest in projects focused on economic development of businesses and communities with diversified linguistic heritages that help develop capacity, expertise and partnerships.

In addition, the Canadian Government has implemented the Aboriginal Entrepreneurship Program (AEP) (Government of Canada, 2023[31]) and federally supports the network of Indigenous Financial Institutions (IFIs) (National Aboriginal Capital Corporation Association, 2023[32]) to provide access to capital, access to business opportunities, and support services for Indigenous entrepreneurs and business owners in Canada. The Business Development Bank of Canada offers the Indigenous Entrepreneur Loan (Business Development Bank of Canada, 2023[33]) to offer financing to grow or scale Indigenous-owned businesses.

Note: Agency for Toxic Substances and Disease Registry. https://www.atsdr.cdc.gov/placeandhealth/svi/index.html; United States Department of Agriculture. https://www.usda.gov/equity-commission; Government of Canada (2021), *Women's Enterprise Initiative in British Columbia*, https://www.canada.ca/en/pacific-economic-development/services/support/womens-enterprise.html (accessed on 19 August 2022); Government of Canada (2021), *Women's Enterprise Initiative in the Prairie Provinces*, https://www.canada.ca/en/prairies-economic-development/services/support/womens-enterprise.html (accessed on 19 August 2022); Black Entrepreneurship Program - Black Entrepreneurship Program (canada.ca); Prime Minister announces support for Black entrepreneurs and business owners | Prime Minister of Canada (pm.gc.ca); Economic Development Initiative (EDI) (canada.ca).

The USDA Equity Commission, which began work in 2021, is composed of external stakeholders that are reviewing USDA policies and programmes to provide recommendations to the Secretary. The Commission includes a Rural Community Economic Development Subcommittee that provides recommendations on rural development, persistent poverty, and underserved communities (EDA, n.d.[34]). Further examples in Box 3.5 elaborate how different government institutions in Canada take different steps towards promoting inclusivity and equitable access through targeted programmes.

In many OECD countries, the use of online platforms have helped facilitate access to information for rural entrepreneurs, social innovators, and community anchor organisations. For example, in Scotland entrepreneurs looking for support can use Business Gateway, an online, one-stop shop for entrepreneurial support, as a point of first entry. The service then directs entrepreneurs to services within their region, or outside of their region if necessary. Regional Development agencies are able to find and trace the beneficiaries across territorial agencies because of the centralised record management system. In Switzerland, a "no-wrong door" policy across cantonal, municipal, and federal agencies helps build in co-ordination, based on demand from entrepreneurs, from the bottom-up (OECD, 2022[35]). In some

regions of Canada, a similar “Business Pathfinder Tool” has enabled entrepreneurs to access government services in a user-friendly co-ordinated way (see Box 3.6 for further examples).

Box 3.6. Encouraging simplification for the delivery of entrepreneurship and innovation support in rural areas

Complementing physical presence with online services can allow for easier navigation of business services according to particular needs. This can reduce complexity and help direct people to the ‘right’ offer in their geographic location without having to relocate. In Scotland, UK, for instance, the main regional development agencies, Scottish Enterprise, Highlands & Islands Enterprise and the newest, South of Scotland Enterprise, work with Business Gateway and local authority councils to deliver support to SMEs through a shared national website (Find Business Support, 2023[36]). The aim of the initiative is to help SMEs find business support wherever they may be. Behind this website is a Business Support Partnership where all the agencies meet and share information to avoid confusion and duplication. In addition, the Enterprise Agencies and Business Gateway share a customer relationship management (CRM) system for all businesses engaging in the public sector, to give an overview of previous and current engagement.

Business Pathfinder Tools, Canada

The Canadian federal government has set up a “Business Benefits Finder” (Government of Canada, 2023[37]), which aims to provide businesses with a list of tailored supports. The tool is designed on the basis of questions and answers that help filter hundreds of federal, provincial, and territorial programmes. A key objective of the tool was to develop a site that is fun, interactive and as user-friendly as possible, while providing the best results. It also aims to reach people who might not know what they are looking for and equip them with information on what the government can do for them. Importantly, the process does not collect or track individual information. The more questions are answered, the more customised and accurate the results will be. A team of four people work to keep information up-to-date, summarise programmes and create the right tags for the programmes. While the page was largely oriented towards business growth in the beginning, due to the COVID-19 pandemic it was expanded to include resilience to economic shocks. The tool currently provides information on 16 000 programme streams (some programmes have multiple sub-services) and is advertised through a sustained marketing effort.

Community Futures, Canada

In an effort to address the specific needs of rural entrepreneurs and bring funding for community support and innovation to rural areas, since 1985, the government of Canada has run the Community Futures Program, which is a community-driven economic development initiative designed to assist communities in Canada’s rural areas. It helps them to develop and implement strategies for dealing with a changing economic environment. They are co-ordinated by federal regional development agencies.

This programme works with 267 Community Futures Development Corporations (non-profits) to provide services to entrepreneurs in their local communities including entrepreneurial and innovation support, strategic community planning and socio-economic development. It also provides support for community-based projects, business financing, business plan consultation, business planning and business start-up assistance. It provides access to capital for small and medium-sized businesses and social enterprises.

Business Support Simplification, United Kingdom

The Business Support Simplification Programme (BSSP) was initiated by the Department for Business Enterprise and Regulatory Reform (now the Department for Business, Innovation and Skills) for English regions. It aims to make it easier for companies and entrepreneurs to understand and access government-funded grants, subsidies and advice with which to start and grow their businesses. It was estimated over 3 000 publicly funded business support schemes existed. Businesses reported that they were confused by the number of schemes, which discouraged them from applying. Streamlining helps save them time and money when looking for support. Better targeted schemes have more impact for businesses and provide the public sector with greater value for money from a leaner system. The 3 000 schemes were reduced to 100 or less by 2010 and made available through the nationally sponsored and regionally administered Business Link gateway. With the new UK government in 2010, this process was consolidated into Solutions for Business. The portfolio will contain only 13 products and will no longer be supported by the administrative regions that ceased to exist 31 March 2011 but rather be offered through an Internet portal.

Source: OECD (2012[38]), *OECD Reviews of Regional Innovation: Central and Southern Denmark 2012*, https://doi.org/10.1787/9789264178748-en; BIS (n.d.[39]), *Solutions for Business: Simplified Business Support*, www.bis.gov.uk/policies/enterprise-andbusiness-support/solutions-for-business-simplified-business-support; Find Business Support (n.d.[40]), *Homepage*, https://findbusinesssupport.gov.scot/ (accessed on 15 June 2023); RPN (n.d.[41]), *Homepage*, https://www.rural.gov/ (accessed on 15 June 2023); CFNC (n.d.[42]), *Homepage*, https://communityfuturescanada.ca/ (accessed on 15 June 2023).

Improving access to finance

Funding rural development and innovation

The focus of this section is on non-government financial intermediaries that serve non-farm rural businesses, particularly new small firms or firms seeking to introduce an innovation. Different processes have evolved to support both rural development and rural innovation. These tend to be highly diverse and vary widely both among states and within states, with some places having an effective set of institutions that provide adequate financial resources, and others having very limited capacity. In particular, access to equity finance is a crucial problem in many rural regions, both to support innovation and to fund more traditional economic development functions. In the relative absence of government support, there is a greater reliance on a variety of private sector initiatives, although some of these are able to access limited government support in the form of loan guarantees or infusions of seed money.

Essentially any firm, organisation or local government has four possible sources of funds:

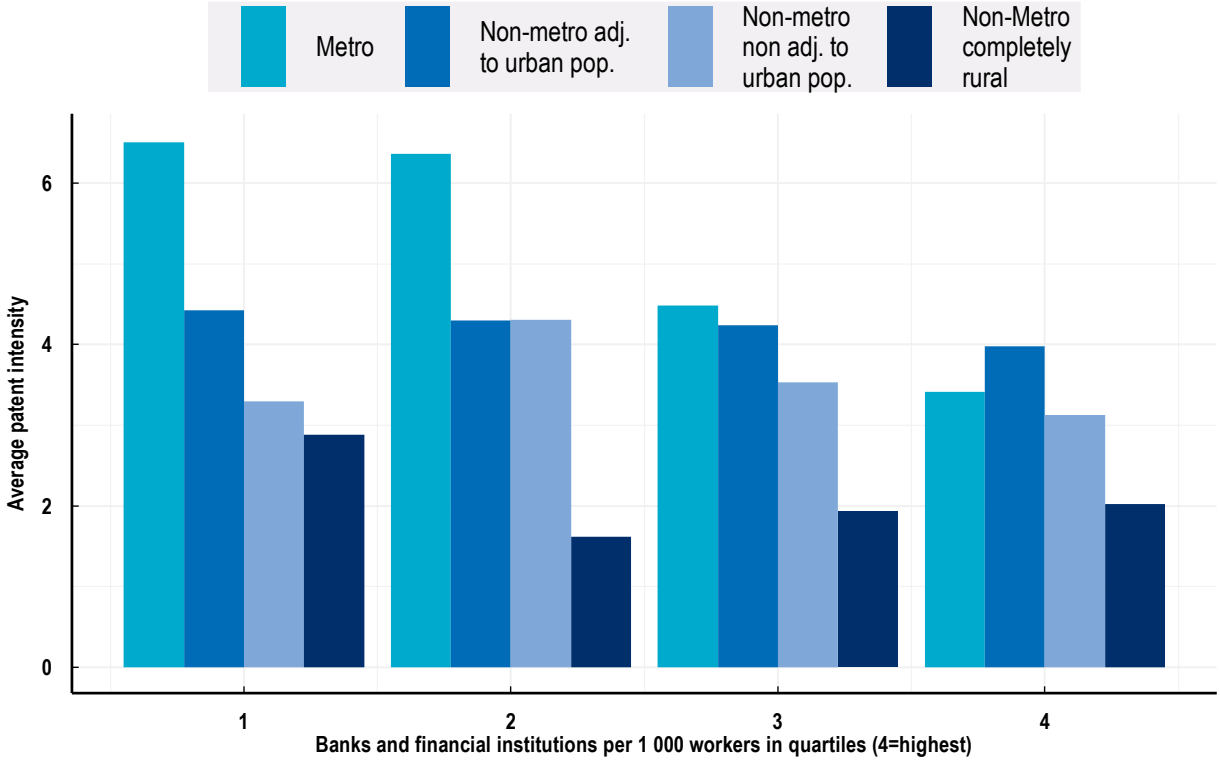
1. Own revenue from its ongoing operations.
2. Equity capital provided by the owners of the business, or the assets of a government or organisation.
3. Debt financing, which provides funds, but creates a liability that must be repaid in the future.
4. Grants, which can be considered to be donations that do not have to be repaid, but that contain restrictions on their use.

The mix of sources of funds varies considerably both by type of entity and across the range of firms, organisations, and governments. For any entity, adequate access to finance is necessary if it is to carry out its intended function. In particular, if a firm, organisation or government is going to introduce an innovation it almost always requires additional funding to do so.

Access to all forms of financial capital is typically more difficult for firms, organisations and governments in rural counties than in major urban centres. Limited access to finance leads to low innovation performance for rural firms as compared to firms in metropolitan counties (Figure 3.11). Some of these gaps reflect structural differences between urban and rural places that lead to inherent challenges. For example, rural firms are typically small and are unable to access equity capital through a listing on a stock exchange, rural governments have small populations to tax, and rural organisations may not attract the attention of wealthy individuals who can provide philanthropic support. Rural lenders may lack expertise to assess atypical loan requests and there may not be many lenders operating in a rural area, which reduces competition. Typically, this rural disadvantage, however, is fairly small for conventional forms of finance for households, like home mortgages and automobile loans. Similarly, established farms have ready access to finance from commercial banks and specialised lenders like the Farm Credit System and the credit arms of machinery manufacturers, as well as from USDA loan guarantees and other financial instruments. Finally, firms with rural branches (or subsidiaries) of large publicly traded firms receive funding from their urban-based parent, which means they don't need access local sources of finance. Thus, large parts of the rural economy face only slightly more difficulty in accessing finance than do their urban peers.

Figure 3.11. Banking and financial institutions and patent intensity

Average patents per inventive occupation associated with banks and finance institutions, by quartile and territory



Note: The patent intensity is computed by dividing the number of patents by the number of innovative occupations in a given county. Panel B shows the correlation between the numbers.
Source: Dotzel, K. and T. Wojan (2022[43]), "An occupational approach to analyzing regional invention", https://ncses.nsf.gov/pubs/ncses22202 (accessed on 15 July 2022); United States Patent and Trademark Office; Bureau of Economic Analysis.

Established non-farm rural businesses are also thought to experience only a slightly larger burden in accessing loans than do their urban peers. However, the funding gap can be high for entrepreneurs wishing to start a new business, especially if that business is innovative and its survival risk cannot be easily assessed. Firms seeking to expand into more distant markets may also face a challenge getting additional funding if they need significant amounts of money that are beyond the ability of their local lenders to provide. Equity finance can be a major challenge for rural firms because there are few potential investors, nor is there the local capacity to help broker and set up such deals. Additionally, rural local governments may have difficulty in qualifying for grant or loan support from national or state governments if they lack the capacity to provide matching funds or even the ability to produce an acceptable application for support. Similarly, rural organisations typically lack the capacity to identify possible sources of funding.

A crucial gap for rural firms, governments and organisations is an inadequate level of financial equity. Without sufficient equity funds, either in the form of cash or assets that can serve as collateral, it is hard to find funding because lenders are concerned that if they are not repaid there will be insufficient money after liquidation to fully reimburse them. Even if a loan is approved for a high debt-to-asset value borrower, it will likely carry higher interest rates or more restrictions on how the money can be used. For grants, fund providers may also be concerned that the grant objectives may not be met if the recipient lacks the capacity to properly administer and utilise the funds. Further, many grants require adequate matching funds for applicants to be eligible, so those places and organisations without adequate equity must compete for a smaller set of grant opportunities. While rural areas in other countries also face these difficulties, they are more challenging in the United States because there is a much lower level of intergovernmental transfer of funds from national and state sources to local governments, and much less funding for rural economic development policies that support firms and organisations.

Innovative specialised financial intermediaries have been established in some parts of rural America to address these particular financing challenges. Often they are rural versions of parallel programmes that exist in marginalised or underserved urban areas. However, fundamental conditions among rural areas differ (e.g., low density and high transportation costs) that can lead to higher costs and lower recovery rates on foreclosed assets. While these intermediaries are generally highly successful, they are not present in most rural areas and many can have difficulty in generating the additional funds to expand their activity. Many of these entities are organised as non-profit corporations and most provide loans at below market rates and/or are willing to accept a lower position in receiving repayment if the business fails. Most also provide some form of supervised lending where borrowers are required to enrol in programmes to improve their managerial and technical capacity and must make regular reports to the lender on their activity. This gives the lender a greater chance to intervene in a timely manner if the business is stressed, which in turn improves the success rates of such lending practices.

Rural non-bank financial intermediaries

There are also a number of rural non-bank financial intermediaries that may offer favourable terms to rural firms—many of which have an expressly social purpose and non-profit orientation (Table 3.2). Importantly, non-bank financial intermediaries in rural communities tend to have a good sense of the communities and people that they serve and are able to provide targeted services to their clientele but also understand the nature of the local economy and can evaluate the riskiness of projects in different ways. Others non-bank intermediaries such as traditional venture capital (VC) may not be well suited to rural areas because most firms are small with limited growth prospects and are removed geographically from the locations of the core venture capital industry.

Table 3.2. Rural non-bank financial intermediaries

Community Development Banks (CDBs)	Provide loans to individuals and firms that cannot qualify for credit under typical terms. However, the loan may also require the borrower to comply with greater oversight or other conditions, which can reduce default risk. CDBs also can house real-estate development arms and operate subsidised housing projects. Other activities may include operating Small Business Investment Corporations that hold equity positions in small businesses and that receive financial support from the Small Business Administration.
Community Development Corporations (CDCs)	CDCs offer a mix of for-profit and non-profit subsidiaries to address the distinct needs of community members. The for-profit portions of the organisation also generate additional funds for non-profit activities.
Community Development Financial Institution (CDFIs)	CDFIs are US Treasury-certified entities that make loans to qualified individuals, firms or organisations. To qualify, the CDFI applicant must demonstrate a viable business model that serves an underfunded client group. Some CDFIs are established as non-profits to serve a distinct community that has difficulty in obtaining loans. Other CDFIs are founded as for-profit entities but with a distinct social purpose that mitigates their incentive to maximise profits.
Small Business Investment Corporations (SBICs)	SBICs are private companies that are licensed and regulated by the SBA to provide debt and equity finance to qualified small businesses. SBICs can include free-standing entities or subsidiaries of other firms, such as banks or development organisations. Each SBIC establishes an initial equity pool of investment funds, and this amount is doubled by the SBA. They typically focus on existing profitable businesses that have sufficient cash flow to repay loans.
Local Initiatives Support Corporation (LISC)	The LISC was established in 1980 as a non-profit foundation to provide grants to deteriorating communities and neighbourhoods seeking to attract private sector financial and technical resources to support their re-development. LISC partners with other funders on housing and business support activity in various communities. While it initially had an urban focus it has expanded into distressed rural areas. Rural LISC was created in 1995 to address the challenges in rural areas. Rural LISC provides capacity building grants, affordable capital, and equity to a network of over 140 rural community-based groups in 44 States and Puerto Rico. To date, they have mobilised $582.2 million in grants and loans for partner organisations plus additional $2.17 billion in affiliate financing. Rural LISC strives to bring partners to the table to help them build and leverage resources and develop solutions. One example is Go Forward Pine Bluff, the organisation spearheading the transformation and reimagining of Pine Bluff through targeted projects, grants, and initiatives. In addition to increasing access to capital in rural areas, Rural LISC strives to bring greater attention to “rural areas in distress”, educate public and private decisions makers on rural capital needs, and demonstrate the value of investing in rural areas (Rural LISC, 2022[44]). LISC funds must be matched dollar for dollar by local funds. In addition, local lenders and businesses must be full participants in the funding proposal and the community must demonstrate that it has the capacity to carry out the proposal.
Rural Focused Venture Capital Firms	The traditional venture capital (VC) model is not well suited to rural areas because most firms are small with limited growth prospects and are located a great distance from where players in the core venture capital industry tend to be headquartered. There are a few examples of successful rural investment firms that act like traditional VC firms, but generally these firms focus on sectors more common to rural regions such as agricultural innovation or firms involved in technology transfer. Importantly they may have more of a portfolio investment strategy and are not looking for a fast exit after rapid short-term growth. Some rural VCs are subsidiaries of other types of rural non-bank intermediaries described in this list.
Credit Unions and Other Co-operatives	In some states, credit unions have formed subsidiaries to finance small businesses in the communities they serve. This activity is seen as being compatible with the credit union mission of providing financial support to members as it can improve local employment prospects and help foster a better quality of life. Similarly, other forms of co-operatives, such as rural electric co-operatives or farm supply co-operatives, have also formed a subsidiary to invest in rural businesses that are vital to the ongoing survival of the community in which they operate.
Angel Investors	Angel investors can operate under a wide variety of organisational forms since they are the result of a group of individuals pooling their money to invest in either new or existing businesses. Typically, these firms are interested in making equity investments in firms that are located near the investors’ homes as this increases their ability to assess investment opportunities and monitor firm performance. While angel investors are a form of venture capital, they can be a more patient form and one that does not look for excellent performance quickly. However, they do not accept the types of high-risk opportunities that are the focus of traditional VC funds. Many of these sources of finance can be thought of as having at least a partial social enterprise orientation, or a dual bottom-line, where profit and community benefits are jointly valued. While some provide conventional loans, they typically have a different metric for assessing credit risk than a commercial bank. Most importantly, most of these entities have some way of either providing equity finance or some form of “patient” capital that does not over-burden a firm with too much debt. In addition, these entities generally operate with a fixed pool of funds, which means that they cannot afford to make many bad funding choices. When compared to a government lending or grant programme they are likely to be more conservative, but they have the advantage in most cases of employing people embedded in the community who may already have detailed knowledge of the inherent risks to each investment opportunity.

Broadening the definition of innovation in OECD rural regions

In rural areas the combination of distance, low population density and limited opportunities to take advantage of economies of scale combined with the large role of natural resources leads to a "low-density economy" (OECD, 2016[45]). Such differences create inherent opportunities for trade because comparative advantages differ, and the resulting urban and rural connectivity can create benefits for both urban and rural areas (OECD, 2014[46]).

Building economic connectivity across different geographies may reduce disparities and increase opportunities for innovation across urban and rural areas. According to a recent report by the National League of Cities (NLC) and the Rural Community Assistance Partnership (RCAP) (2021[47]), these are facilitated by an inclusive innovation ecosystem, access to broadband and digital inclusion, aligning workforce skills with industry needs, and an approach that engages with regional organisations and businesses.

Innovation has played a central role in rural areas of OECD countries since the early stages of the industrial revolution in the 19th century. Improvements in agricultural and mining technologies underpinned the rapid growth of manufacturing in urban areas (Mokyr, 2018[48]). Over the 20th century, continuous innovation allowed ever larger increases in productivity in resource extraction and first stage processing, which in combination with falling transportation costs, has reduced the share of household income spent on food and released large amounts of labour for other occupations, primarily in urban areas. Broadly speaking, two distinct innovation processes can be distinguished. One involves a formal systematic search process that has evolved from the model proposed by Schumpeter to the current, regional innovation systems approach (McCann and Ortega-Argilés, 2016, p. 24[49]). Investments in formal R&D often lead to inventions. When implemented, the production gains from these inventions more than cover the underlying costs of developing the innovation, thereby generating a positive rate of return. This process is associated with measurements of innovation that focus on formal R&D outlays and patents developed.

A second process is older and predates the general adoption of the scientific method and the Industrial Revolution (Mokyr, 2018, p. 17[48]). Innovation in earlier times relied upon a combination of serendipity, individual intuition, and efforts to remove impediments to improved well-being. This type of innovation can be characterised as "user-innovation" as it stems from an individual being confronted with a problem that is pressing enough to warrant substantial efforts to find a new approach to resolving it (Baldwin and von Hippel, 2011[50]). A classic example is James Dyson who invented a new type of vacuum cleaner because he was unhappy with the performance of existing models (Roy, 2016[51]). Crucially, both types of innovation continue to take place, albeit at different rates. In particular, Baumol (2010[52]) sees the innovative entrepreneur as a useful complement to large-scale innovation systems, with individual entrepreneurs and small firms playing key roles in producing "revolutionary breakthroughs" (Baumol, 2010, p. 30[52]). In order to appreciate the extent of innovation in rural areas, a broad definition is required that goes beyond the most common approach of measuring expenditures on research and development activity as the main input and patents registered as the main output.

The broader definition of innovation recognises that many types of new ideas and approaches can improve society. New ways of providing services by governments, new forms of civil society organisation or new activities established by community organisations are all innovations that improve well-being (for examples, see Box 3.7 and case studies in Annex 3.A). This broader notion of innovation also encompasses actions that may not directly add to productivity of the workforce, but they make an improvement in the communities where firms and workers are located. Further, in rural areas many goods and services that are common in urban locations are not readily available from investor-owned firms or local government. As a result, people in rural communities have often self-organised to jointly provide alternative institutions that deliver the services they desire (for examples, see Box 3.7 and case studies in Annex 3.A).

The broader approach is particularly valuable when innovation is seen as a potential source for economic development in rural areas (French, 2021[53]; Federal Reserve Bank of St. Louis, 2022[54]), instead of only a key factor for explaining national economic growth (Aghion and Howitt, 1990[55]). A broader perspective on innovation can include: improvements in management, logistics or labour relations at firms that lead to increased productivity. It can also include similar innovations by both governmental agencies and various for-profit and non-profit firms that provide services or other non-patentable innovations. Clearly such innovations can lead to better quality of life for households and increased productivity for firms and organisations.

Box 3.7. Example of Innovation in a broader context

Ducks Unlimited

The organisation Ducks Unlimited was founded by a group of duck hunters in the United States in 1937 to improve habitat for waterfowl, mainly on active farmland. The main way it does this is by paying farmers to maintain wetlands on their property, rather than drain them to add to planted land. Hunters support Ducks Unlimited because it improves their hunting experiences and the funds they donate are used to improve habitat, which increases migratory bird populations. Importantly, the initial focus of the programme was in the prairie provinces of Canada where most of the birds shot in the United States are hatched. The innovation that US hunters found was a mechanism to influence the behaviour of farmers in another country who had no direct interest in providing better habitat.

Domains and sources of rural innovation

Discussions of innovation are commonly restricted to firms in the private sector. Profit-oriented businesses may undertake a search for an innovation if they believe it will enhance their competitive position. Government may support R&D, or even early stage implementation of new inventions where it sees evidence of market failure that limit firm innovation efforts, but the main focus of most innovation analysis remains on entrepreneurs and larger firms (Grossman and Helpman, 1994[56]; Nelson and Winter, 1977[57]; Shearmur, Carrincazeaux and Doloreux, 2016[58]).

In rural areas where markets are small and competition is limited, it may be difficult to find an existing product or service that meets the needs of an individual or firm. Clearly the combination of the Internet, e-commerce and package delivery services has improved market access considerably but has not fully addressed all issues. Further, in rural areas it may be harder to observe non-market solutions developed by peers than in a city where proximity provides better chances to network with someone who has solved a similar problem. This suggests that in rural areas, particularly for those economic activities that are not common in urban areas, such as resource extraction, there may be difficulty in finding external solutions for production problems. This can lead individuals in rural areas to engage in a search for their own solution - user innovation, which in turn can trigger an entrepreneurial action. Thin and incomplete markets have consequences for competition as well as innovation.

Rural areas also face issues arising from more limited government activity. Public services are both more limited and more costly in most rural areas, not only because actual cost of provision is higher but also because local governments lack either the fiscal capacity or the authority to deliver many of the services that are available in large cities. Where conventional means of providing public services are costly, local governments are compelled to explore innovative ways to deliver services in different ways that provide equivalent outcomes (OECD, 2021[59]). Moreover, the combination of limited public services and a limited set of services provided by private firms has stimulated local organisations to in rural areas to find ways to

provide innovative ways to fill this gap. This makes the “third sector” a significant source of innovation in rural regions.

Civil society can play a key role in filling gaps by providing private and public services. Social enterprise in the form of co-operatives and other not-for-profit firms has a long tradition of expanding the range of services when investor-owned firms cannot generate a high enough rate of return to justify operating in a small rural community. Similarly, community organisations, such as volunteer fire brigades, provide an alternative way of delivering essential public services in places where a professional fire department is too costly. Thus, when assessing innovation in rural areas it is important to go beyond an examination of the efforts of private firms. Moreover, in those rural places where both local government and civil society are engaged in finding ways to provide a more complete set of foundational services there may also be better opportunities for private firms to undertake innovative actions that increase their competitiveness that leads to enhanced local development.

The OECD (2022[60]) explored how different methods of defining and measuring innovation can have an impact on the way we understand innovation in different contexts. Chapter 2 of this report also sets out how we approach innovation through a rural lens, which prioritises the original Oslo definition of innovation, through measurement mechanisms that adjust for the structural components of rural and non-metropolitan areas that differ from urban definitions.

Currently rural innovation can largely be thought of as having one of three distinct origins.

- The first is innovation that originates in rural areas either through formal efforts to identify new products or services or new processes to produce products or services. In these instances, rural innovation is driven by perceived local opportunities for higher income, better productivity, or more efficient public service delivery. This is in line with the traditional Oslo Manual definition of innovation often adopted by national governments (OECD, 2022[60]).
- A second source of rural innovation originates in urban areas, but the innovation effort is explicitly intended for use in rural areas. In this case, urban firms produce goods with the primary goal of serving rural customers. For example, the Firestone Tire company was started to produce tires for automobiles, but its founder Harvey Firestone grew up on a farm in Columbiana, Ohio and was aware of the disadvantages of the all-steel tractor wheels in use in the early 20th century. He led Firestone’s initiative to develop the first pneumatic rubber tractor tires using his family farm in Columbiana as a test site. The first tires were sold in 1932 and quickly became a major innovation supporting American agriculture.
- The final stream of rural innovation is made up of innovations that were first applied in an urban context but were then transferred to rural areas. For example, the internet was initially developed by the US Department of Defense but was quickly adopted by farmers as a way to obtain better commodity price information (James and Estes, 1996). All three innovation streams provide clear direct benefits to rural firms, households, and communities, while also providing indirect benefits to urban areas in the form of better or cheaper goods and services that are exported from rural locations.

In sum, we can identify the three sources of innovation in rural areas as the following:

1. Formal process of innovation based on local opportunities in rural areas.
2. Innovation developed in urban areas explicitly for rural challenges.
3. Innovation adopted from the urban context.

Of the three streams, the first two clearly lead to rural innovations, while the third stream may be less clearly innovative. If a rural firm or organisation introduces a product or process that was previously adopted in an urban context in exactly the same way that it is used elsewhere then this may be more appropriately characterised as technology transfer and not innovation, even though the approach or

product is novel in the rural region. However, if the technology undergoes significant modification to be successfully applied in a rural context, then at some point the new way of using the technology may be considered to be sufficiently different from its standard use to be considered an innovation. For example, laser gun sights used on guns in rural areas is clearly a form of technology transfer, but when a laser gun sight was first adapted to be used as a guide to allow a saw operator to make a more precise cut when sawing a log into boards, this was a novel application of the technology to a new production process.

In addition, in rural areas it is important to recognise that innovation often occurs outside the traditional focus of formal research efforts to identify new products or processes. These efforts are typically seen as involving research by industry or government to generate a patentable idea. Patentable research is important in rural areas, particularly for research conducted in urban areas with explicit intent for the outcome to be applied in rural areas. This would include agricultural research conducted by national government or universities to improve agricultural productivity or by companies that supply farm equipment or pesticides to farmers. Similarly, mining and forestry machinery is typically patented and provided by large multi-national companies with urban research centres.

First-stage processing of natural resources also largely occurs in rural regions because it involves a weight reducing activity that lowers subsequent transport costs and can often reduce product deterioration in the case of agricultural or fish products. Once again, much of this technology is developed and refined in urban areas, particularly for large scale processing establishments. However, a considerable share originates in rural areas as small-scale local firms develop processing technology to meet their specific needs.

In the United States this involves local co-operatives that provide inputs and marketing services to farms, but rural co-operatives also account for a considerable share of electricity, telephone and now broadband infrastructure in rural regions. These co-operatives were created by local actors when investor-owned forms determined that the cost of providing goods or services did not meet the required profit margins. Because members are both owners and users of co-operatives services, they capture both the revenue that a conventional firm would extract and also recognise the benefits from the consumer surplus that an investor-owned firm or a government entity cannot capture. This makes the total benefit to member-users high enough to justify undertaking an activity that is too costly for investor-owned firms, or even governments. This third-sector activity is a source of significant innovation that, while almost completely local in terms of its impacts, has a significant impact on both the quality of life and, in some instances, on the productive milieu in the community. Additional examples of the innovative nature of community organisations and encouraging experimentation in partnership with the public sector are available in Box 3.8.

Similarly, because local governments in rural areas face the typical challenges of long distances, low population density and an inability to capture scale economies, they often must find innovative ways to provide essential public services. The problems of rural government are typically exacerbated by weak fiscal capacity which limits their available revenue. With limited resources, some core “public services” in rural areas are not provided by government but are the responsibility of volunteers. For example, while in cities fire-fighters are professionals who are directly employed by local governments, in rural areas they are almost always volunteers who receive limited financial support from the government, which is supplemented by donations from residents to cover expenses.

Box 3.8. Promoting a culture of experimentation

Regulatory innovation sandboxes

In 2016, the first regulatory innovation sandbox allowed experimentation in the fintech[2] industry. According to a recent study, since then 73 fintech sandboxes have been established in 57 countries, with more than half of them being established between 2018 and 2019 (World Bank, 2020[61]). An

Innovation Sandbox is a type of regulatory sandbox that encourages innovation, suspending certain regulatory requirements while innovators experiment on whether outcomes of innovations may develop useful innovations that may solve greater issues or prove whether regulations may be needed. Regulators across the globe are using regulatory sandboxes to provide a safe environment for emerging technologies to test regulatory boundaries.

A recent report showed that they tended to serve as a base to test the necessity of regulations, facilitate firm start-up entrepreneurship, and foster new partnerships. A few examples include a Fintech Sandbox in Australia and a Digital Sandbox in the United Kingdom. Additionally, initiatives in the agri-tourism sector of the Jura region of Switzerland fit a similar definition.

Fintech Sandbox in Australia

The Australian government established an Australian Licensing Exemption Scheme through the Australia Securities and Investment Commission that allowed exceptions for eligible fintech companies on certain products and services for up to 12 months without a license. This allowed firms to begin operating quickly, with low barriers to entry for new fintech companies through lower compliance costs. The firm is required to notify the ASIC of their plans but remains temporarily free to experiment on product and services offered.

Digital Sandboxes in the United Kingdom

Starting with the beginning of the global COVID-19 pandemic in May 2020, the Financial Conduct Agency in the UK began piloting a "digital sandbox." The initiative is currently in its initial stages that attempt to provide guided support for firms looking for a digital testing environment with the aim of addressing some of the challenges of the pandemic. The initiative has a specific goal and is administered through a call for applicants who are given the right to participate based on whether their aim is to accomplish one of the targets of the administration. Those targets include preventing fraud, improving the financial resilience of consumers, and improving access to finance for small and medium-sized entreprises (SMEs).

Regulatory exemptions in tourism for the region of Jura, Switzerland

While not directly marketed as such, two examples of regulatory sandboxes with the specific target of developing the tourism sector are found in the mountainous region of the Jura, in Switzerland. Both initiatives were driven from the bottom-up and included the co-ordination efforts of the regional innovation system agencies. The first one was built in collaboration with TalentisLab, which requested exemption from environmental protection legislation that limited activities associated with eco-tourism. After an application for exemption and a call for proposals, a new initiative to encourage eco-responsible tourism is being put into place that provides housing at various camping areas.

Second, exemptions from visiting publicly protected places while visiting local towns, through an initiative that provides access to a "secret route" (Ville de Porrentruy, 2023[62]) to groups of tourists that have acquired digital keys. The community of Porrentruy, alongside the regional innovation system's agency services, worked on reducing regulations on public access to touristic sites. This has allowed the town of Porrentruy to gain visibility and attractiveness, which is a welcome development given the business slowdown due to COVID-19.

Innovation labs

Another increasingly popular way to encourage innovation that has taken flight are "Living labs," "Fab labs" and similar initiatives to bring previously inaccessible tools to budding innovators. The Interreg Europe Policy Learning Platform (Interreg Europe, 2021[63]) is one of the agencies supporting the increased use of such tools that create a place to learn, experiment and enjoy the process of innovation.

While the different labs vary, they generally provide a mix of services such as the skills, material and advanced tools to participants that can include university-industry collaborations and provide prototyping services for SMEs.

Living Labs, Portugal

The experience of implementing Living Labs in Portugal dates to the 1990s. Since then, they have been of crucial importance for economic, social and business development of the country. To date, 18 projects have been developed, some of which are part of the European Network of Living Laboratories (ENoLL). There are diverse types - local, sectoral and thematic Living Labs - organised in regional, national, and transnational networks. Sectoral and thematic Living Labs include labs for energy, well-being and health, e-government and digital participation, sustainable environment, mobility, rural and territorial development, and industry and logistics.

The Smart Rural Living Lab (SRLL) was founded at the end of 2007 and is located in Penela in central Portugal. It aims to develop new methods and technologies to identify the weaknesses and strengths of rural areas, find references for sustainable rural development, export the acquired knowledge to other rural areas and collaborate with citizens to promote rural areas. Key local issues are related to aging population and the weak development of the economic fabric. The goal of SRLL is to promote innovation and development in the exploration of innovative technologies, methods, and applications to achieve better integration of rural areas into the global supply chain, create new services/ systems/ products and business opportunities, and promote citizen participation.

SRLL has established itself as a centre for innovation, best practices, and sustainable development of rural areas where the agri-food and forestry sectors are strong. One such problem is a shortage of shepherds to take care of sheep needed to produce Rabaçal, a local cheese (protected designation of origin). In response, a Smart Farm concept called "FarmReal " was tested (Farmreal, 2023[64]). This involves investment in a community herd via crowdfunding and the adoption of individual animals by investors who would then survey their physical activity and milk production digitally via specific sensors. Users become "virtual shepherds" of real goats and can follow the day-to-day life of the adopted goats, monitor their behaviour and socialisation through updated photos and videos, their GPS location, as well as the area and amount of vegetation consumed by the herd.

Source: Smart Rural 21 (n.d.[65]), *Penela*, https://www.smartrural21.eu/villages/penela_pt/; Farmreal (n.d.[66]), *Homepage*, https://farmreal.pt/en (accessed on 15 June 2023); Deutscher Bundestag (2018[67]), "Reallabore, Living Labs und Citizen Science-Projekte in Europa", https://www.bundestag.de/resource/blob/563290/9d6da7676c82fe6777e6df85c7a7d573/wd-8-020-18-pdf-data.pdf.

Living lab e-Health and Smart Energy Grids, Eindhoven, The Netherlands

As part of the Brainport Development Cluster, Eindhoven also houses an example of a living lab that focuses on the development of time-limited trial runs for new products and services. Brainport works with local stakeholders, higher education institutes, government and a consortium of private sector parties, to focus on experimenting new solutions to pre-existing issues. Through Living labs, individuals are given a license to test out a new initiative in a short time frame to get feedback as soon as possible, and determine the feasibility, benefits and scalability of such a project. For example, Living Lab eHealth provides elderly people with the opportunity to try out new medical and healthcare services and a Smart Energy Grids project provides new energy solutions for social housing.

The Center for Innovation and Entrepreneurship in CalPoly, United States

As a service to students, led by students, the California Polytechnical State University creates a space for budding entrepreneurs to use materials involved in developing new products and services in a variety of sectors including but not limited to manufacturing, farming and services. This initiative provides some of the more advanced, and often more expensive tools to experiment with innovative

ideas. Some of the materials available for students to use include vinyl cutting, 3D printing, virtual reality, computer numerical control (CNC) routing and laser cutting resources.

The student-run organisation also offers workshops for learning engineering and artistic skills, as well as small grants that facilitate the development and starting of new student-led projects. Funds for grants are targeted towards bringing ideas from the innovation sandbox to entrepreneurial fruition.

Experimenting in the public sector

The use of "serious games" to support governments and make various options for courses of action visible through systems thinking and futurism has been increasing in the policy arena. This can be a good option to replace conventional brainstorming sessions with sticky notes and drawings on a board.

The European Commission (EC) Joint Research Centre (JRC) has worked with experts in these types of games at the Hawaii Research Center for Future Studies to create the Scenario Exploration System (SES). Participants explore their long-term objectives against scenarios and consider various stakeholders. By creating a realistic journey towards the future, SES generates a safe space to uncover perspectives and thinking, with a view to simulating possible responses linked to issues of interest to the participants.

SES is available under a Creative Commons licence, which allows anyone to freely use and modify the game, as long as they share the results of their adaptation under the same conditions. The OECD and Observatory of Public Sector Innovation has made available detailed instructions and templates to be freely downloadable (Observatory of Public Sector Innovation, 2023[68])

Augmented reality in policy making

Governments are also realising the potential of AR and VR for public good. Similar to gamification, governments and their partners are using technology as tools to unlock new insights.

For example, in the United States, the New York City suburb of New Rochelle was recently named a 2018 Bloomberg Mayor's Challenge champion city for its pioneering use of AR and VR to engage residents in plans for new buildings and public spaces in the city. Through this innovative project, residents can use AR apps on their smartphones to envision what a new park might look like, employ interactive software to design streets and use VR headsets to review different options for buildings and provide their opinions.

Source: OECD (2021[69]), *Embracing Innovation in Government: Global Trends 2020*, https://trends.oecd-opsi.org/ (accessed on 15 June 2023).

Conclusions

A significant amount of innovation is taking place in many rural areas of the United States, particularly when innovation is defined to include social innovation and innovations in local government practices. However, there appears to be a high degree of variability in both the types and levels of innovation across rural communities.

Firm-level innovation clearly occurs in rural areas and can be disruptive.[3] Most rural innovation, however, is less visible and its impacts are mainly felt in the immediate vicinity of where it is implemented. This is true for firm-based innovation, social innovation and government innovation. Although the benefits can be relatively small they can make a difference in the community where they take place by either making it more competitive or a better place to live. Efforts to identify rural innovation have largely focused on firm-level analysis, which remains the focus for national policy in most countries.[4] When innovation is more

broadly conceived to include new ways of delivering public and private services the scope for rural innovation expands considerably. Innovations by organisations and by local governments are common in rural America. Each of the three case studies demonstrate this type of innovation, even where innovative products and processes were not seen. Since its inception, OECD Rural Policy has promoted a bottom-up, place-based approach to rural development. This reflects the recognition that each rural place faces a unique set of opportunities, resources and constraints, and must find its own solution to reaching its objectives. Essentially this is an argument that rural communities have no other choice than to innovate. It is hardly surprising, therefore, to find examples of social and public innovation in rural communities.

While many rural communities face challenges in improving the skills of the local labour force they can adopt significantly different approaches to resolving them, depending on their circumstances and the skills they need. In Gallup the skill development programme is being directly managed by the Council of Governments, while in Pine Bluff it is driven by the local Community College. In Columbiana, skills development is a more complex process with firms, community leaders and school officials seeking ways to integrate formal education with experiential learning so graduates are better prepared for the mix of available jobs. Further complicating the process is the variability among state governments that set their own policies and priorities for education and workforce training.

In many cases the innovations are in principle transferrable to other places, but there is rarely a mechanism to make this a reality. Few of these innovations are patented and few people visit small towns looking for innovative ideas to emulate. While technology transfer processes exist In the United States, the focus is on larger scale innovations that can have a significant individual impact on relatively large economies.

Because local governments in the United States are highly reliant on property taxes to fund their activity there is intense competition to attract new businesses and new residents that can add new tax revenue. This competition often leads to an unwillingness to co-operate with nearby jurisdictions because of a common belief that helping another community leads to a weaker outcome. In addition, it also leads to communities competing to offer lower taxes as a way to attract new development under the belief that some revenue is better than none, especially if the incoming firms or households result in increased economic activity and second-round local benefits. Even when a specific community tries to collaborate with others it may not find many willing partners. One of the main objectives of EDA is to provide incentives for collaboration. This has clearly been successful in Gallup but less so in Pine Bluff and Columbiana where intergovernmental co-operation is more limited.

All three places relied on the assistance of external actors to support their development effort, even though the underlying vison for development appeared to have been drawn from within each community. These actors included federal agencies, in particular EDA and USDA, but also a number of non-profits that focus on supporting community development. The presence of this support seemed to be instrumental in their successes which raises two questions. The first is the extent to which other communities have access to this type of support, and the second is how might a community without similar support undertake development. In the US system, it is difficult for communities to seek support, which has the advantage of there being a self-selection process that requires a community to first decide it wants to engage in development.

All three places relied on support from an external source of funding that had its own interest in seeing development occur. In essence a public-private partnership was formed with the private party contributing a considerable amount of money and in some cases specific expertise. The infusion of funds provided several benefits. The first was the ability to begin acting quickly, which created local interest. Second the initial infusion of funds bolstered local actors' credibility, which enabled them to gain access to other sources of funds. Third, the partner was able to undertake complementary investments that were co-ordinated with the community efforts.

In all three places it was important to build social cohesion before undertaking significant traditional economic development activity. Many of the initial acts were fairly small but accomplishing them provided

some sense of progress in the community and expanded local support. Actions included storefront remediation on Main Street and improving pedestrian spaces to attract more people downtown and working to increase the amount of retail activity in city centres. None of these concepts are particularly innovative in and of themselves, but in each community they were carried out in a different way.

Finally, while the US government provides a large amount of programme and project funding to rural places, it does not provide a framework for using these funds in a systematic way. This makes it incumbent on each rural community to identify a specific development strategy that it can use to apply for specific project support. It is this situation that leads to the importance of innovation by local government and innovation by civil society in a community. Because each rural community is unique in terms of its development opportunities and the proper sequence for carrying out steps, every place has to have a development approach in the sense that it has to fit their unique situation. However, the US approach can leave some places with a bleak future if they cannot assemble the internal capacity to begin the development process.

However, because many local governments in rural places typically lack adequate capacity to define and implement a development strategy, an industry has developed that supports the community development process. The entities in the process are diverse in nature and include: community development specialists at Land Grant universities, as well as faculty from other higher education entities; a variety of non-profit firms, many of which are funded by philanthropical organisations; and some for-profit consulting firms. In addition, EDA funds EDDs, to provide capacity to local (including rural) communities to assist with development strategies, and University Centers, to provide technical assistance to communities looking to establish and carry out development strategies. When it works well, the result is a development plan that can leverage local resources to attract federal and other forms of support for ongoing economic development projects. In the absence of a leading role by national government, a quasi-market solution has evolved that relies upon private and social enterprise to create institutions that can support those communities that are prepared to engage in the type of bottom-up development process endorsed by the OECD.

Finally, the United States, unlike other OECD countries where multi-year funding for programmes and projects is often available over a pluri-annual funding cycle, only authorises funds for a single period. While funds may be paid out over a number of years the full amount has to be set aside in specific budget period. This makes it more difficult for communities to use federal programmes in a systematic way if they cannot be sure that funds for a particular programme will be in place in the future. In response, a number of non-profit funding entities have developed over time to provide a stable flow of finance to rural communities and rural firms.

Annex 3.A. Additional descriptions of case study areas

As part of the analysis of this report, the OECD undertook three case study visits to Gallup, New Mexico, Pine Bluff, Arkansas and Columbiana, Ohio. The distinct nature of the three regions provides insight into the challenges of promoting rural innovation when the underlying factors and characteristics are very different. This annex shares details on the three case studies conducted as part of this study.

Columbiana, Ohio

A former steel town facing population decline

Historically Columbiana was integrated into the steel industry located along the Mahoning River until the late 1970s. Columbiana specialised in constructing the wooden patterns used to create moulds for casting steel. Unlike much of Northeastern Ohio, which has experienced significant population decline since 1980, Columbiana experienced a slow increase in population. On the other hand, the population of Columbiana County peaked at 113 000 in 1980 and is now about 102 000. While most of Columbiana is located in Columbiana County, a small part in the north of the city is in Mahoning County.

Metal fabrication remains an important part of the local economy and it is supplemented by a growing logistics sector. Both short stay and day-trip tourism is expanding, and the city has started to attract new residents from the Pittsburgh MSA as houses become more expensive there and possibilities for hybrid work increase.

On the other hand, with a population of under 7 000 and close proximity to the larger communities of Boardman, East Liverpool and Salem, Columbiana does not have a strong retail sector. For example, the closest Walmart or Home Depot is in Salem. This means that a large share of retail sales leak out of the community. Similarly, while there are several urgent treatment centres in Columbiana, the closest hospitals are in Salem and Boardman. Rural communities of similar size in relatively densely settled regions face a similar situation, but it does limit some sources of economic growth.

Columbiana adopted a city manager form of government in the 1970s and has only had three city mangers since then. City managers are unusual in smaller cities where the common form is a mayor and city council who share administrative responsibilities. Most places are unwilling to delegate that much authority to an employee, nor are communities that rely upon either volunteer or nominally paid elected officials prepared to pay for a professional manager. However, with part-time elected officials there are often major administrative issues and there can be a lack of continuity in decisions. A clear benefit for Columbiana from having a long-tenured city manager is his ability to master grant applications and knowing which entities can be approached for a particular source of funding. While it may be possible to hire consultants to support grant applications, doing so entails a direct financial cost and provides no continuity, and the city manager is able to follow through both in implementation and on reporting results to the grant provider.

Columbiana has adopted a number of public sector behaviours that contribute to its growth capacity. While these exist in some other rural places they are not common. In addition, the combined effect of multiple governance innovations is likely leading to significant synergies and complementarities that contribute to improved development.

Collaboration and engagement

Collaboration in communities is one of the keys to fostering innovation, and it can be fostered by third party facilitators such as civil society/NGOs or community development organisations. In Columbiana, both public officials and business leaders are engaged with the local schools, including the primary school (elementary school), in an effort to create an environment where students see Columbiana as a place where they might like to live, and to provide students with a sense of what employment opportunities are available locally. In response the high school has hired a teacher who teaches classes on entrepreneurship and business skills. Additionally, the city engages with students both to get their input on recreation facilities and to allow them to play a role in how Main Street is to be redeveloped. Efforts by the city government to engage the students and the efforts by the school system to support that engagement have generated reports of students feeling pride and investment in their community, building enthusiasm for reinvesting in and contributing to the community as adults.

Key assets and opportunities

Most small rural communities rely solely on grants for financial support because their fiscal capacity is so small that they must spend it all on current outlays that are mandatory. With no internal investment funds, they face two challenges. The first is they can only obtain funds to invest in projects that grant makers are currently prepared to fund, which limits their activity. Second since most rural places are in this situation, competition for these funds is intense and many applicants do not receive funding. However, Columbiana has made a strong effort to build internal investment capacity over time, which allows it to apply for "cost-shared" programs that have fewer applicants and are also preferred by many grant providers, since they both leverage the grant providers money and have inherently lower risks. This has given the city the opportunity to make both more investments and a broader range of investment than is common in rural America. Further, in many communities, relationships between local government and developers are problematic. In Columbiana, there is strong partnership between the local government and the private developer who is building housing and retail development on the old Firestone Farm. This major development is creating a new retail and recreational complex as well as new housing. The City government has found ways to restructure local regulations to encourage development. Two examples are illustrative. The first was the creation of a local ordinance to allow people to carry alcoholic drinks in public during specified city events. Typically, in Ohio walking and drinking on public property is illegal. This ordinance is used to allow alcohol sales when events are held on Main Street as it is closed to traffic, or in other public venues. Allowing alcohol sales both increases vendor sales and causes more people to participate, which creates a better sense of community. Second the city has pioneered a reduction in local and school taxes for new homes. City taxes are reduced for the first 15 years of occupancy as a mechanism to make home ownership more attractive in Columbiana. Lower property taxes reduce the monthly cost of home ownership, which has attracted more people from higher cost areas near Pittsburgh. While local schools lose some money in the short term, the influx of people has led to more housing being constructed and to higher property values in general.

Culture has also been a source of community cohesion and attractiveness. The Columbiana Cultural Collective is transforming the Main Street theatre into a community arts hub. The theatre had been rehabilitated about 15 years ago and served as location for amateur theatre productions, concerts and other events but closed with COVID shutdowns. Not only is the theatre a dominant part of the downtown streetscape but it has been vital in bringing people in the community together over multiple decades. The Collective is working on a plan to raise funding over five years to buy the building from a benefactor who purchased it with the intent to sell it to the Collective at a discount from the purchase price. The collective is a good example of an innovative social enterprise that has leveraged private philanthropy to provide a window of opportunity to assemble the funds to ensure the theatre remains a key part of the community and provide additional opportunities for cultural events.

Finally, a clear advantage of Columbiana is a strong K-12 school system. Strong local support for schools, both financially and in terms of community engagement, has resulted in better school performance than for proximate peer districts. The strategy of attracting nearby households is helped by both the lower cost of housing and good local schools. In addition, the city is investing in improving its visual attractiveness through a Main Street revitalisation programme and by creating better parks and recreation facilities. The city is fortunate that it received a large tract of land from the estate of Harvey Firestone to establish a multi-purpose park near one of the new housing developments.

Examples of innovative private enterprise

Typically, innovation is seen as a business opportunity where a new product or process is introduced into the marketplace. Many of the manufacturing firms in Columbiana are adapting to changing conditions, though mainly in incremental ways. However, several are implementing significant innovations that are increasing productivity and their competitiveness.

Humtown Products is a third-generation family firm that has embraced additive manufacturing and radically redesigned its labour relations processes to increase worker engagement and foster team production. The firm is engaged in producing moulds and cores for metal casting using sand as the medium. One part of the company has shifted to using 3-D printers to form the moulds, and now has the most sand printers in the country. The other part of the firm uses more traditional core and mould production processes but has installed monitoring technology on most of its machinery that show individual operators their real-time production rate displayed as an effective hourly wage. As operators increase output without an increase in scrap rates they earn more money. In addition, each operator's performance can be compared to other workers doing the same task. While the base hourly rate remains set by historical performance levels, the current rate is much higher as operators learn from each other and have an incentive to improve productivity. Since machine operator performance is affected by supporting workers, such as forklift drivers and packers, they too are provided with performance bonuses as output increases.

Humtown Products was named the 2020 Manufacturer of the Year by the National Association of Manufacturers in the small to medium-sized enterprise category. They have developed collaborative relationships with the local schools, including the use of gamification to help teach 3rd and 4th grade students problem-solving skills at Crestview Local Schools.

Pine Bluff, Arkansas

An industrial and agricultural economy facing population decline

The population in Pine Bluff peaked at 57 400 in 1970 and has declined rapidly since 2000. The city is about an hour away from Little Rock, the state capital, and is part of the Little Rock Combined Statistical Area. Pine Bluff is served by the Union Pacific Railroad and the Port of Pine Bluff on the Arkansas River provides a connection to the Gulf of Mexico via the Mississippi River. A network of federal and state highways connects the city to the larger region and to the national Interstate Highway System. Currently there is no scheduled air service to Pine Bluff.

Pine Bluff has experienced a significant economic decline in the last 30 years as much of its economic base eroded. While agriculture in the Delta region remains important, it offers far less employment than in the past and farm consolidation has caused a decrease in the rural population. Forest products, which once was a significant industry, has also declined, particularly the local pulp and paper mills. Union Pacific no longer has a service depot in the community and employment at the Pine Bluff Armory has dwindled. Much of Pine Bluff's role as a regional retail and service hub has also disappeared as Little Rock has grown and expanded its retail trade area into communities that used to be served by Pine Bluff. Economic decline has led to accelerating population decline, a falling local tax base, decreasing property values, increases

in empty and dilapidated housing and retail establishments, and city infrastructure that is both deteriorating and too large for the current size of the community. With economic decline human and financial capital has left the community as people with higher skills relocated to growing parts of the state and other parts of the country.

Key assets and opportunities

Pine Bluff has several key strengths that are being mobilised as part of a major redevelopment effort. These include:

- Two strong higher education institutions, the University of Arkansas at Pine Bluff (UAPB) and Southeast Arkansas College (SEARK), that are fully engaged with local leaders in efforts to rebuild the local economy. UAPB is a four-year school with a historically Black student population and a significant research programme, while SEARK provides a 2-year associate's degree and a broad range of technical education programmes to students.
- Simmons Bank, a major regional banking organisation, was founded in Pine Bluff and has expanded its operations to seven states. Its corporate headquarters remains in Pine Bluff and is the only large commercial business in the city core. Notably, Simmons has made a number of large investments in the revitalisation of Pine Bluff, including large financial commitments from the Simmons Foundation. While part of this support can be explained by the bank fulfilling its Community Reinvestment Act (CRA) obligations, the level of support goes well beyond the amount CRA would require.
- A high degree of racial harmony in the community. About three-quarters of the city population is African American. African Americans hold all of the elected positions in the city and county, with both Black and white community members being engaged in leading community organisations.
- Strong co-operation between elected officials in the city and county governments.
- Widespread recognition across the community that major reinvestment is required for Pine Bluff to survive. While some debate still exists over how this is to be accomplished, there is general support for change.
- Significant progress in removing or renovating commercial buildings in downtown and cleaning up and renovating neighbourhoods.

On the other hand, Pine Bluff faces major challenges, including:

- A dysfunctional local school system that is under the control of the state government because it has performed so poorly in the past.
- High rates of poverty, low levels of employment and a workforce with poor skills, especially those needed for the modern economy.
- A considerable number of large commercial buildings in the city centre that are in poor condition and are unlikely to ever return to their original use. This leaves the question of whether it is better to demolish them or rehabilitate them. In either case there is typically no clear sense of what use is appropriate for the location.
- Identifying a new economic function for the city and county that will support local objectives for better employment opportunities and higher incomes.
- A deteriorating housing stock that leads to falling home values that reduces household wealth.

The Go Forward Pine Bluff (GFPB) development approach

The Go Forward Pine Bluff (GFPB) development approach is the central part of efforts to revitalise the community. It can be seen as an innovative response to a systemic redevelopment challenge, and while it

has yet to demonstrate its success it already provides useful examples of how to undertake a comprehensive approach to renewal. The effort started in early 2015 when a group of citizens formed to try to develop an initiative to revive the city's downtown, which had been seen as an impediment to attracting new investment in any part of Pine Bluff. Beyond removing urban blight, they identified three underlying problems that were interconnected: inadequate housing, poor workforce skills and a weak education system. Resolving these issues was seen as a necessary precursor to restoring economic growth.

This in turn led the group to try to create community support in early 2016 for a locally supported initiative to identify a community development strategy. The group solicited volunteers who would make a one-year commitment to work for several hours each month on one of four themes – economic development opportunities, education reform, improving quality of life, or improving government and infrastructure. Through 2016, 100 community members, with support provided by the steering committee, developed a draft plan. The result, in the form of 27 key points, was presented at an open community meeting at the end of 2016 and was broadly endorsed by the large number of attendees.

The strong community support at the meeting led to the local business community raising USD 18 million to support the implementation of the plan. With this support in place the city voted in a referendum in 2017 to increase the local sales tax to fund an implementation programme. The vote was 69% in favour and Go Forward Pine Bluff (GFPB) was created to manage the initiative with seven years of funding. Since 2018 various entities have been created or revised by GFPB to carry out specific programme tasks. Currently about 96% of the set of key points identified at the community meeting are in varying stages of progress. COVID slowed progress significantly for two years and now with funding ending in 2025 there is more pressure to complete the tasks.

Four challenges limit the speed of work. The first is that GFPB must rely on the city (and to a lesser extent the county and state) to actually implement many of the recommendations, and government priorities are not always aligned with those of GFPB. Second, private investors who will make the bulk of the investments have been unwilling to commit funds until more progress has been made to ensure their investment is viable. Third, the amount of work involved is difficult for a small paid staff and a limited number of volunteers to carry out. As the end of the funding period approaches, it becomes harder to attract paid workers even as they become more necessary because their job tenure is short. Finally, while GFPB has a strong vision of how the community of Pine Bluff can evolve, it has not clearly identified an economic development strategy that will generate the employment opportunities needed to take advantage of the up-skilling of the workforce and revitalisation of the city.

The set of key points endorsed by the community in 2016 cover a wide range of potential activities. Some must be accomplished before others, some are simpler to implement, and some require other actors, such as city government to carry out. Importantly, some are more innovative than others, but all are necessary. Given the magnitude of the decline over recent decades virtually all the things being done by Go Forward Pine Bluff (GFPB) involve constructing a platform on which economic development can occur. Some of the main elements of this foundation that are being implemented to date are discussed below.

The Generator. Simmons Bank provided a downtown building that could be rehabilitated to house a multifunction technology centre that also hosts classes for nascent entrepreneurs. The Generator operates after-school programmes and well as school field trips to expose primary (elementary) school students to computer technology and encourage their interest in developing digital skills. This is especially important in Pine Bluff where schools lack up-to-date technology and many homes cannot afford to provide it. Also, in a community where local entrepreneurs are not visible, the Generator provides support for small cohorts of people who wish to explore becoming an entrepreneur. The focus of the programme is on helping the individual identify a potentially viable business model and helping them assess whether they truly want to commit to being an entrepreneur.

Downtown Revitalization. This programme combines a number of fairly standard elements into an integrated approach. Improving the physical appearance of downtown is essential to convince both the local population and potential external investors that a viable future is possible. Crucially, GFPB recognises that the population of the city is likely to continue to shrink and this means that the structure of the city should adjust to conform to its smaller size. In this process, there is an opportunity to reconfigure the form of the city so that it better serves new conditions. In particular, increasing the amount of high-quality affordable housing is seen as a necessary condition to attract both external workers with higher skills as well as firms that can employ them.

Restoration of smaller commercial buildings that are in relatively good condition has occurred and some of these are now operating again. Other small commercial buildings that were in poor condition have been demolished. A streetscape programme has restored and expanded sidewalks. Several large commercial buildings have been purchased and their exteriors have been stabilised while potential new uses are explored. Where uses cannot be identified, the buildings will be removed and the land converted into housing, among other uses.

Crucially the large number of dilapidated buildings in the city centre provides an opportunity for new urban housing in neighbourhoods that span multiple city blocks. New urban core housing will only be viable if there is additional public investment in creating parks and public buildings like libraries, recreation centres and other public services. Since Pine Bluff is also the county seat for Jefferson County it has both city and county facilities, and it already has several major public buildings, including the library and aquatic centre in its downtown. While the high school is currently downtown residents are concerned that it may be relocated to a suburban site where construction costs will be lower but the amenities and accessibility of the city centre will be lost.

Renovating and Repurposing Suburban Neighbourhoods. Much of the older suburban housing stock is severely dilapidated. In some blocks most of the housing is in poor condition or abandoned. In other blocks the number of severely dilapidated houses is relatively small. With limited funds for housing redevelopment GFPB is trying to demolish housing on contiguous blocks where conditions are the worst and intervene in blocks where slowing blight will encourage reinvestment. Reducing the amount of poor-quality housing in older suburbs helps to improve the market for new urban housing and can provide opportunities for alternative land uses.

Preparing the Workforce for a Digital Economy. While GFPB has no direct influence on the school system it does serve as a forum for community concerns by improving educational outcomes. GFPB also works with the two local institutions of higher education in Pine Bluff: the University of Arkansas - Pine Bluff (UA-PB) and Southeast Arkansas College. Both institutions have expanded programmes that provide technical skills and can increase employment prospects. Both attract a large number of local graduates who are seeking post-secondary education. Retaining these students however hinges on improved prospects for local employment.

In particular, SEARK has recently entered into a partnership with People Source, a public benefit corporation that provides training and staffing services for private companies. People Source will locate on the SEARK campus and is expected to employ about 250 people, some of whom will be students. Because People Source has offices in Arkansas and several adjacent states it has a strong sense of emerging career opportunities and the capacity to help students prepare for those jobs. This will also help SEARK identify areas where it can adjust its curriculum to better match graduates' skills with employers' needs.

Working beyond the City. Pine Bluff remains the largest city in southeast Arkansas and its local labour market extends beyond Jefferson County, particularly to the southeast. It is already a regional and higher education centre and its local labour market extends out about 60 miles from the city. With more retail and service providers it has the potential to serve an even larger retail trade area. For this expanded role to be possible, Pine Bluff will have to work with Jefferson's County officials and elected leaders in the ten other counties in the South East Area Economic Development District, and particularly with Cleveland and

Lincoln counties that are part of the Pine Bluff MSA. GFPB has already developed a strong working relationship with Jefferson County.

Fostering entrepreneurship

Currently the rate of entrepreneurship in Pine Bluff is low, particularly in the African-American community, which comprises the bulk of the population. Fostering a higher rate of entrepreneurship is important for several reasons. Most importantly it offers a potential path out of poverty if the business is successful. Second, a larger business community offers a group of potential leaders for the community. Third, a larger number of locally owned businesses expands the range of locally available goods and services in the community. Even if the firms do not offer many jobs, their presence improves the local quality of life.

GFPB has focused on helping women entrepreneurs start their own businesses, including home based businesses. While motivations vary, some women found that self-employment was more amenable to work-life balance in the labour market. This is especially salient in places where access to work-life balance support schemes (such as child-care facilities) are limited. Their potential is also enhanced by the common finding that women now have higher levels of educational attainment than men, which provides them with stronger formal education. GFPB holds classes at the Generator as a training site to help small groups of nascent entrepreneurs get ready to begin an enterprise. Recently UA-PB received approval to host a Small Business Administration-sponsored Small Business Development Center, which will add resources for the next step of actually starting a business.

Importantly, the entrepreneurial classes connect potential entrepreneurs with local lenders. It provides them with direct experience on how to finance their business. Because many of the entrepreneurs are minorities, local banks can use money from their Community Reinvestment Act (CRA) requirements to offset losses associated with startups. This makes it easier for entrepreneurs with limited wealth to get started.

A challenge for new entrepreneurs, particularly those with only limited ties to the financial industry is understanding how financial intermediation works. Similarly, banks often have little incentive to engage with potential borrowers who will require a large investment of time and resources to make only a small loan. GFPB plays the role of an intermediary by only bringing borrowers that it has worked with to bankers and other lenders who see there is a social benefit to the community if they can help a viable business get off the ground. Certainly, the fact that CRA encourages banks to make this type of effort is also useful.

GFPB also engages with other entities that can provide financing for entrepreneurs. This is critical because banks can only provide debt financing that is secured either by the wealth of the entrepreneur or by some other financial intermediary pledging collateral. For example, federal government loan guarantees provided by USDA, SBA or other agencies reduce lender risk exposure and can lead to a greater willingness of a bank to lend. Another type of financial intermediary with a broader local economic development mandate, such as a Community Development Financial Institution (CDFI), or Community Foundation, may also be able to provide funding either as a grant, a subsidised loan or some form of equity investment (Freshwater, 1990).

Gallup, New Mexico

A city deeply connected to the Navajo Nation in the midst of energy economy transition

The city population has been relatively stable over the last few decades, with only limited growth. Notably, a large share of the population are Indigenous people living off-reservation. The Gallup retail trade area extends deeply in the Navajo Nation and the city is a hub for both shopping and government services provided to people on living on the reservation. It has also been a major hub for Native crafts, particularly

silver jewellery and weaving. The city is located on Interstate 40 and is also on the Burlington-Northern Santa Fe east-west mainline from Los Angeles.

Gallup recognises that it must identify new economic functions to replace fossil fuel extraction if it is to prosper. Its role as a service centre for the Navajo Nation and other tribal communities will remain important, as will tourism; but a new function that offers full-time, higher paying jobs is desired. Gallup sees an opportunity in its location on both a major east -west interstate and on the BNSF east-west rail mainline as a way to first develop a strong logistics industry and then leverage that to introduce manufacturing. In addition, the presence of existing rail and road infrastructure, Gallup is roughly and 11-hour drive from the ports of Los Angeles and Long Beach. After 11 hours of driving commercial trucks are required to stop for a rest period, which makes Gallup an ideal location for both a maintenance site and for a transhipment hub. With a logistics hub there is potential to attract light manufacturing firms, which would add another dimension to the city's economic base.

Collaboration and engagement

Many EDA economic development districts are characterised by only limited interactions among the multi-county entities and local governments. In the case of the Northwest New Mexico Council of Governments there is far greater collaboration and the COG carries out a number of functions that might normally be the direct responsibility of a county. In part this is because the COG is authorised by the state to carry out more functions than economic development and transportation planning. But this authorisation exists because member governments have concluded that it is in their interest to have one entity with specialised knowledge that allows it to be more effective carrying out extra functions. These include environmental planning, water planning, energy efficiency initiatives and obtaining grant funds for a range of technical support activities. The COG has developed a common approach and model to maximise its impact and effectiveness while being able to customise and adapt to capture and deliver on place-based strategies and opportunities.

Key assets and opportunities

Located within a one-hour drive from Gallup, the Navajo Technical University trains Tribal youth in STEM related disciplines. The Center for Advanced Manufacturing was created to provide more specific and job focused experience for students in additive metal manufacturing. Because there is varying experience in manufacturing on the Navajo Nation it was felt that the best opportunity for success would be in a new field where leading regions have yet to emerge. The programme has invested in creating labs with modern equipment for students to use for training with the objective of creating entry level skilled technicians. In addition, the centre partners with a number of universities and national laboratories to provide internships for its students and research opportunities for their graduate students and post-docs. This two-way flow increases the chances for employment of Native youth and may encourage new start-ups to be developed by individuals coming to the Navajo Nation to conduct their research.

The Greater Gallup Economic Development Corporation (GGEDC) workforce development programme has developed and implemented its own tailored workforce development programme due to local dissatisfaction with the available options. Local employers were unhappy with training programmes, particularly those focused on menial skills. In addition, employers wanted more female workers than were available. The programme starts by requiring participants to get a GED certificate if they don't already have one. The core curriculum is drawn from the National Center for Construction Education and Research (NCCER) curriculum, which is centred on providing students with basic skills before proceeding to a series of modules that are applicable to specific tasks or responsibilities. This allows each student to tailor their studies to a specific occupation and potentially to an employer. Many of the module sequences can be used as an entry point for a formal apprenticeship in skilled trades once students gain more experience.

The Navajo-Gallup water supply project is a long-standing collaboration between the Navajo Nation and the City of Gallup to improve the local supply of water by building an aqueduct from the San Juan River (USBR, n.d.[70]). The impetus for the project was a settlement in 2009 on a decades-long legal battle over water rights. The Navajo Nation advocated that it was entitled to an increased share of the water in the river. The settlement made it possible for the Navajo-Gallup Water Supply Project to begin in earnest. Construction of the project is only now underway, due to major problems both in securing funding and is establishing rights of way across land parcels that were held by a large number of owners. Joint work by the city, the Council of Governments and the Navajo Nation slowly overcame these obstacles. This long-term collaboration has created the opportunity for additional co-operation between the Navajo Nation and the city, even though their interests differ at times (USBR, n.d.[71]).

There is a proposed joint Indian Health Service and community hospital. Additional medical facilities are needed both by Gallup and the Navajo Nation. The Indian Health Service, a federal agency, has prioritised the construction of an area inpatient hospital that could be built as a healthcare campus to expand services to behavioural health, dialysis, and many other services. The community has also discussed consolidating its community hospital, Veterans Affairs clinic and other health services on this campus, as well as how to attract medical supply and manufacturing firms for additional job creation.

Providing broadband in rural areas is expensive due to large distances and small populations. In the Gallup area, costs are even higher because of fragmented land ownership, which increases the cost of obtaining rights of way for copper or fibre lines. Sacred Wind Communications began serving the Navajo Nation in 2009 using fixed wireless, which is cheaper to install and avoids easement issues. The company has a contract to provide internet access to schools. Under the agreement, the infrastructure can serve as a beach head from which the company can build out additional capacity to serve houses and businesses in close proximity to the school.

A local bike shop in Gallup (the Silver Stallion) was interested in improving health conditions among Tribal youth. They recognised that while it was possible to get grants to buy bikes for distribution on a reservation this would not have much impact. Instead the company worked with a local school to create a bike riding club as part of the physical education programme. In addition, the company connected with school social workers who saw that communal bike riding could help children with social problems. The programme became part of Outride, which is a national organisation that supports this type of school-based cycling programme. The bikes remain at the school and students start by going on shorter supervised rides to gain experience, confidence and interest. Over time some students become interested in competitive bicycle racing and can compete at a local and regional level.

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Notes

[1] In some cases, such as those in New England, Economic Development Districts (EDDs) are based on towns.

[2] The fintech industry includes firms that provide financial services that have traditionally been offered by banks and financial institutions, through alternative digital platforms and technology.

[3] The best example comes from rural northwestern Arkansas where Sam Walton, Don Tyson and J.B. Hunt lived within 30 miles of each other. Each started a small business in the middle of the 20th century that became a national force in its industry and changed how competing firms conducted their operations – WalMart in retail, Tyson in meat-packing and Hunt in trucking. A crucial element of this example is that the innovations these individuals made were largely in the form of changes in management practices. All three firms initially grew in rural areas and steadily revised their operations until they were able to challenge larger incumbent firms based in urban centres. Finally, all three firms continue to have corporate offices in their 'birthplaces.' As a result, the surrounding region has become the fastest growing part of Arkansas.

[4] Even the NSBC, which oversampled rural firms, found that patent activity was far lower than in urban areas for firms of similar size; but the survey did find examples of innovative rural firms. Firms in rural areas may not choose to patent or they may produce innovations that are not readily patentable. In the first instance, they may not fear competitors stealing their idea because the market is too small or they are too far from a competitor to be noticed, or the cost of patenting is seen as being prohibitively high relative to its benefits. In the second instance, the innovation may involve a process that is not readily patentable or is a minor adaptation of an existing product to make it more useful.