



Centre for Innovation
Policy Research

Canolfan Arloesi
Ymchwil Polisi

Exploring the innovation prospects for Carmarthenshire

A Report prepared for Carmarthenshire County Council

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1. Introduction

Metropolitan areas have dominated the spatial policy agenda of governments in OECD countries for the past 25 years or so. This urban-centric focus has been driven by the belief that cities and city-regions are the ‘engines’ of their regional and national economies and therefore they need to be fostered rather than frustrated in their efforts to generate economic growth. Although there is a correlation between productivity, innovation and agglomeration, these urban-centric linkages have been exaggerated because the correlation does not hold true for all cities in all regions (Tyler et al., 2017).

What’s more, the political dominance of this urban-centric spatial policy has led to some unintended consequences, the most damaging of which is the neglect of non-metropolitan areas, particularly rural areas. To a large extent the ‘rural question’ had virtually disappeared from the spatial policy agenda until very recently. Indeed, whenever rural and other nonmetropolitan areas registered on the political radar, they did so in a way that actually confirmed their second-class status by being referred to merely as ‘the hinterland’ of the city (Morgan, 2018).

In the following report we venture to suggest that this urban-centric era may have peaked because of the combined effects of three emerging trends, namely societal trends, intellectual trends and political trends.

Societal trends: while it is still too early to predict the long-term effects of COVID-19, because it’s impossible to disentangle the enduring from the ephemeral impacts at the moment, there is a good deal of evidence to suggest that one of the effects – hybrid working – could well be here to stay. For example, in a special report on ‘the future of work’ it was found that the average employee preferred to work from home for nearly half the week (Williams, 2021). Although the balance between home and office will vary from sector to sector and from firm to firm, it appears that a majority of city centre workers prefer hybrid working to the traditional 5-day commute, creating new opportunities for non-metropolitan areas to recruit and retain highly skilled people who would hitherto have looked to live in or close to the city. While the normalisation of hybrid working does not spell the death of cities, not least because agglomeration economies and face-to-face communication remain powerful forces in the generation and dissemination of knowledge, urban researchers predict that the pandemic will nevertheless trigger significant ‘social changes in the structure and morphology of cities, suburbs, and metropolitan regions’ (Florida et al., 2021: 1).

Intellectual trends: the urban-centric bias in spatial policy over the past quarter century has its counterpart in innovation policy. One of the common mantras in innovation policy studies has been that innovation is largely an urban phenomenon. Indeed, one critic of urban bias has succinctly summarised the problem in the following way: ‘it has almost become a research premise, as opposed to a research question, that cities are the font of economic innovation’ (Shearmur, 2012: 29). According to this argument, the thrust of the mainstream innovation policy literature is that cities are quintessential innovative milieus, the implication being that

the rest of the planet plays little or no role in the innovation process. However, in recent years there has been a healthy intellectual backlash against this urban-centric bias as a new generation of researchers is beginning to discover that innovative firms come in many shapes and sizes and that it's the quality of their *linkages* – local as well as non-local - to partners, suppliers, customers and universities that is the critical factor in their success. In short, researchers are beginning to discover that 'innovation in the periphery' is not the oxymoron it has been assumed to be (Eder, 2018; Fitjar & Rodríguez-Pose, 2011). This intellectual Zeitgeist is also finding echoes in the policy world because the OECD recently launched a new multi-country research programme that aims to explore the nature and extent of *rural* innovation.

Political trends: perhaps the most important of all these trends is the new political trend in spatial policy designed to give parity of esteem to non-metropolitan places. The urban bias in spatial policy provoked a political backlash in non-metropolitan areas in many countries; so much so that researchers have variously described it as 'the geography of discontent' and 'the revenge of the places that don't matter' (McCann & Ortega-Argilés, 2021; Rodríguez-Pose, 2018). In the UK context the political backlash helps to explain the Conservative government's electoral success in old industrial areas and its novel commitment to the "levelling up" agenda, its new spatial policy priority according to the Prime Minister (Johnson, 2021). What remains to be seen is whether the levelling up rhetoric can be translated into levelling up realities in the non-metropolitan areas of the UK. Although the much-promised Levelling Up White Paper has yet to materialise, the rhetoric is already informing a wide array of policies, especially spatial policy as well as policies that have not hitherto had an explicit spatial dimension, such as innovation policy for example. But as we will see in chapter 2, the UK Government (UKG) has introduced a strong levelling up dimension into its recently launched Innovation Strategy and it committed itself to enhancing research and innovation spending outside the 'Golden Triangle' of London, Oxford and Cambridge, where the majority of public research and innovation funds have been spent in the past (Forth & Jones, 2020).

The fact that new opportunities may be opening up for non-metropolitan areas does not mean that they will amount to anything because local agents – firms, local authorities, universities and the like – need to have fashioned the collective capacity to work in concert to make the most of the rapidly changing spatial policy landscape in the UK. This capacity for place-based collective action is an important ingredient in the recipe for innovation and development, especially in rural and non-metropolitan areas which do not enjoy the density of local actors that characterise institutionally thick metropolitan regions.

All the international evidence suggests that a capacity for collective action depends on the efficacy of linkages between local partners on the one hand and between local and non-local partners on the other. In short, it's the quality of inter-organisational relationships that is most critical for local and regional development (OECD, 2018).

While inter-organisational collaboration between local authorities has been underway for some time in Wales, it has accelerated in recent years as a result of the City and Growth Deals that we address in chapter 2. Also significant is the fact that a new Rural Forum has been

created in Wales to represent the nine largely rural local authorities and the rationale for this institutional innovation is twofold: to raise the collective voice of these non-metropolitan areas and to design joint solutions to common problems. To realise these twin aims a new Rural Vision has been produced to reflect the shared challenges faced by the Rural Forum members, including 'lower population densities, distance from major population centres and transport infrastructure, higher costs of delivery for public services, and the impacts of broad social and economic trends on rural communities' (Woods et al., 2021: 2).

It is no coincidence that a new Rural Vision emerged when it did. Although the nine local authorities were concerned to counter the urban-centric bias in spatial policy, they were mainly animated by the fact that Brexit had triggered new threats and opportunities as a new set of policies would need to be designed in the UK - in areas including agricultural support, rural development and regional economic investment - that had previously been designed in the EU context. A post-Brexit environment was perceived as an opportunity to design a 'new integrated approach, connecting previously separate policy silos' (Woods et al., 2021: 2).

But as we will see in chapter 2, a more integrated spatial policy has been conspicuous by its absence in the early days of the post-Brexit era because the governments in Cardiff and London have been unable or unwilling to synchronise their place-based policies.

Finally, a word about the origins and aims of this report. Carmarthenshire County Council (CCC) has been one of the most pro-active in Wales in addressing the twin threats of Brexit and Covid. Among other things it has established an independent Business Advisory Group to help the authority to design and monitor a post-Covid economic recovery strategy (CCC, 2021). In addition, it has been a pioneer in applying for, and winning, successive awards under the Welsh Government's Foundational Economy Challenge Fund. And it recently secured 12 of its 13 bids to the UK-managed Community Renewal Fund, having already secured 2 important bids to the UK Levelling Up Fund. The commissioning of this report is arguably another sign of the council's pro-active approach to local innovation and development.

The aims of the commission were both general and particular. The general aim was to identify proposals to support the recovery and restructuring of Carmarthenshire's economy through innovation. The particular aims were to explore the contribution of certain key sectors, specifically: the role of the county council and the wider public sector, especially with respect to the use of public sector spending power to support innovation; and to focus in particular on the Foundational Economy; Health and Wellbeing; Digital innovation; and the impact of Climate Change and the prospects of a Green Recovery by harnessing the potential of the Circular Economy.

The commission proceeded through three stages: (a) a desktop analysis of key documents such as the Business Advisory Group meeting notes, Economic Recovery and Delivery Plan and the CLES report work on community wealth building and progressive procurement; (b) consultations with key stakeholders in the county, the region and the nation to identify the challenges, constraints and future opportunities for innovation; and (c) the development of a strategy to promote and support innovation in Carmarthenshire.

Although we originally planned to conduct around two dozen stakeholder consultations, the number eventually snowballed to 50 in total. These were all conducted on a Chatham House basis, so no information in the report is attributed to anyone. Fortunately, all the stakeholders consented to be included in the report and they are listed in the appendix. We would like to thank them all for so generously sharing their time and their knowledge.

2. The multi-level policy landscape

The post-Brexit era has already witnessed significant changes to governance systems and place-based funding schemes. National and local policymakers in Wales will need to keep abreast of these changes because governance and funding need to be understood in terms of the new multilevel policy landscape in the UK. For the first 20 years of devolution place-based funding schemes were largely governed by a combination of EU regulations on the one hand and Welsh Government policies on the other, since UKG were prone to adopt a ‘devolve and forget’ attitude to the policy domains that were devolved to Wales and the other Celtic nations. In this policy context, local authorities were attuned to the *supra-national* level in Brussels and the *national* level in Cardiff Bay, since the UK level seemed both distant and removed from economic life in Wales, even though large economic levers remained in London thanks to the Reserved Powers model of devolution (OECD, 2020).

In governance terms the pre-Brexit past could not be more different to post-Brexit Britain, where the ‘devolve and forget’ attitude has been jettisoned in favour of a new centralism that is sometimes referred to as ‘muscular unionism’. Far from being a superficial political change, this new governance system carries important implications for the way in which place-based policies are designed and delivered, especially the Shared Prosperity Fund that is intended to replace the EU Structural Funds.

In this chapter we briefly focus on each of these new levels of governance to identify some of the key challenges, one of which is how to forge the necessary multilevel synergies without which place-based policies are rendered ineffectual. To this end we focus on: (a) *the UK level*, where place-based policies are supposed to contribute to the UKG’s new Levelling-Up spatial policy agenda (b) *the national level in Wales*, where the Welsh Government is designing a new place-based innovation strategy and (c) *the subnational level*, where local authorities are increasingly engaged in two-tier working arrangements: regionally through their City and Growth Deals and locally within their local government jurisdictions.

The UK Level: the new centralism

The Devolved Administrations in Scotland, Wales and Northern Ireland have been forced to adjust to a radically new political environment where the UKG plays a much more interventionist role in *all* parts of the country. What is now abundantly clear is that UKG plans to assume the role that the European Commission once played in the management of the Structural Funds, albeit with one major difference. The main difference is that UKG intends to be more pervasive and more prescriptive than the EC was either able or willing to be, despite economic development being a devolved competence. This is the *new centralism* and it is

most clearly embodied in and symbolised by the United Kingdom Internal Market Act (UKIMA). The Act came into effect on 18 December 2020 and it represents the lowest point of inter-governmental relations in the history of devolution in the UK. Not surprisingly, the Welsh and Scottish Parliaments refused to give their legislative consent to the Internal Market Bill. The key provisions of the UKIMA include the following: new rules on how legislatures and governments in the UK can legislate to regulate goods and services in future; the regulation of professional qualifications in the UK; giving UK Ministers new spending powers in devolved areas; and reserve powers for UKG related to subsidy control. Of all these provisions, perhaps the most controversial are the mutual recognition principle (section 2) and the financial assistance powers (section 50).

The mutual recognition principle for goods means that goods made, or imported into, one part of the United Kingdom that comply with relevant legislative requirements in that part, can be sold in the other parts of the United Kingdom, without having to comply with any relevant legislative requirements in those other parts. This principle in effect means that the Devolved Administrations cannot regulate the supply of goods in the Celtic nations if they are deemed to comply with regulations in England, thereby neutering their policies in all the devolved areas.

Section 50 of the Act gives the UKG wide powers to provide financial assistance to any person for, or in connection with, a wide range of specified purposes. These purposes include promoting economic development, providing infrastructure, supporting cultural activities and events, and supporting educational and training activities and exchanges. The financial assistance powers extend to funding activities in policy areas devolved to the Celtic nations. It was under these financial powers that UKG launched the Community Renewal Fund and the Levelling Up Fund (Welsh Senedd, 2021). This Act proved to be so controversial that the three finance ministers of the Devolved Administrations issued a joint letter to protest about the way it allowed UKG to bypass devolved governments and undermine the devolution settlements. The crux of their protest letter is reproduced below.

‘As Ministers in the Devolved Governments of Wales, Scotland and Northern Ireland, we wish to register our shared concerns about the UKG’s decision to bypass democratically agreed devolution arrangements to deliver the Levelling Up and Community Renewal Funds announced at Budget 2021...The UKG ignored the Devolved Governments’ efforts and requests to input to the development process for these funds for almost three years and is now using powers under the UK Internal Market Act to bypass us completely. It is ignoring our respective devolution arrangements, delivering funding to meet Whitehall’s priorities rather than those of the people of Wales, Scotland and Northern Ireland. This must be addressed before further policy development takes place on the Shared Prosperity Fund. Denying us any meaningful input, harms the effectiveness of these funds, will duplicate resources, and risks value for money and the achievement of better, fairer outcomes, which our communities and people deserve’ (Welsh Government, 2021c).

A second key difference is the quantum and nature of the funding in comparison to EU funds. Though much later than originally planned, the first tranche of funding under the Levelling Up and Community Renewal Fund has been announced and the results have been uneven across

the UK and within Wales. In addition to these announcements the 2021 Spending Review also unveiled a whole series of other levelling up initiatives, some of which set worrying precedents. For example, the first allocation from the UKSPF was made in the form of the £560 million for a programme to improve adult numeracy across the UK over a three year period. As fiscal analysts in the Wales Governance Centre concluded: “Traditionally, UKG spending announcements in areas devolved to Wales (including education) trigger a Barnett consequential. However, since the programme is funded from the Shared Prosperity Fund rather than the Department for Education’s departmental budget, this will not be the case. The Levelling Up Fund and the Shared Prosperity Fund have been treated as separate departments in the budget documents, with no attached comparability factor” (Wales Fiscal Analysis, 2021).

The 2021 Spending Review was also notable for the fact that the levelling up strategy was to be applied to domains that hitherto had been largely untouched by spatial policy considerations, like research and innovation funding. According to SR21: “The government will ensure that an increased share of the record increase in government spending on R&D over the SR21 period is invested outside the Greater South East, and will set out the plan for doing this in the forthcoming Levelling Up White Paper. The investment will build on the support provided throughout the UK via current programmes such as the Strength in Places Fund and the Catapult network”(UK Government, 2021: 86).

The multiple levelling up initiatives announced in SR21 highlight the growing influence of central government in the devolved nations, underlining the need for coordination and collaboration between the administrations in London and Cardiff Bay. This issue needs to be addressed as a matter of urgency because the current system of inter-governmental relations in the UK is suffering from the lowest level of political trust since devolution was established. The Dunlop Review of inter-governmental relations confirmed this assessment, saying: “There is a broad consensus, with which the Review agrees, that the UK’s intergovernmental relations machinery is not fit for purpose. The problem should be addressed by the creation of a UK Intergovernmental Council (UKIC). It would replace the Joint Ministerial Committee and reset relationships for the future. It would be a forum for co-operation and joint working on both opportunities and challenges” (Lord Dunlop, 2019: 10).

The challenge of multilevel policy coordination is arguably the most serious governance problems in post-Brexit Britain and it is symbolised in microcosm by the fact that central government’s *Plan for Wales* was written without UKG having a single conversation with the Welsh Government. In the context of the new multi-level policy landscape, when research, innovation and regional economic development are ever more dependent on harnessing multiple funding schemes at different levels of government, the failure to collaborate is a recipe for disaster if it is allowed to continue.

The National Level: two models of devolution

The UK and national levels provide the context and shape the nature of the opportunities at the regional level. The Welsh Government currently finds itself negotiating with two rapidly

evolving models of devolution in Wales. For the first 20 years of devolution the *national* model of devolution (from London to Cardiff) was the only game in town. More recently, however, this national model has had to co-exist with a *subnational* model of devolution within Wales as four regions begin to take shape to deliver their City and Growth Deals and, from next year, to assume new powers under the proposed Corporate Joint Committees. In other words, the Welsh Government finds itself in the middle of a new multilevel polity in the UK and this is doubly challenging because of the new centralism in the UK and the new regionalism in Wales where the policy landscape seems set to become ever more polycentric. This new multilevel policy landscape means that the Welsh Government needs to re-think its role in regional development along the lines of the recent OECD review, which recommended a more strategic role for the national government as we highlight below (OECD, 2020).

As regards its relationship with London, the Welsh Government has said that UKG is acting in ‘an aggressively unilateral way’ towards the devolved nations. The First Minister, Mark Drakeford, summed up the inter-governmental problem by saying: ‘We have not seen the constructive and collaborative relationship between the governments of the UK that is essential’ (Drakeford, 2021).

The Welsh Government feels it is being bypassed as UKG seeks to deal bilaterally with individual local authorities, a stance that undermines existing spatial policy goals which aim to build *regional* consortia of local authorities for City Deals and Growth Deals, all of which involve a *trilateral* partnership between UKG, Welsh Government and Local Government (Waite & Morgan, 2018). Local government leaders in Wales are concerned about these new forms of contested governance because “the importance of maintaining a three-way dialogue stands out from the points made above. It could become very confusing if different tiers of government are giving different messages, developing competing initiatives or, worse still, contradictory ones” (WLGA, 2021: 4).

In this new multilevel policy environment it is important to refer back to one of the key recommendations of the OECD review of regional development and public investment in Wales. Given the Welsh Government’s tendency to work in silos, the OECD argued that there is an urgent need for stronger horizontal and vertical coordination of regional development activity among actors and for a stronger incentive for them to work together. Among other things, therefore, it urged the Welsh Government ‘to take a more strategic role, focused on setting objectives, coordinating policy and monitoring performance, while subnational authorities concentrate on meeting their service responsibilities’ (OECD, 2020: 26).

Although the OECD report contained valuable findings and judicious recommendations, it was never asked to address the issue of inter-governmental relations in the UK, the issue that subsequently transpired to be the biggest governance problem in post-Brexit Britain, namely the problematical relationship between the governments in London and the devolved nations. At the time of writing there are no ministerial meetings taking place between the governments in Cardiff and London, save for the fortnightly meeting between Michael Gove, the Secretary of State for Levelling Up, and the First Ministers of the Devolved Administrations. In fact, the only substantive discussions that have taken place between Wales and UKG on the Shared Prosperity Fund have involved not the Welsh Government but

Welsh Local Government Association officers, who were invited to be part of a SPF Task Force convened by Whitehall. Clearly, the state of inter-governmental relations in the UK is crying out for urgent attention because innovation and regional development schemes need to be aligned if they are to be impactful.

Although research, innovation and regional development funding will increasingly come from the UK level (and from the EU level for Horizon Europe funding), these funds could and should be synchronized with the priorities of the democratically elected Welsh Government. These priorities are summarized in the form of ten well-being goals in the Programme for Government for the Sixth Senedd and they are highlighted in Figure 1 below.

Figure 1 The Ten Well-being Goals of the Programme for Government



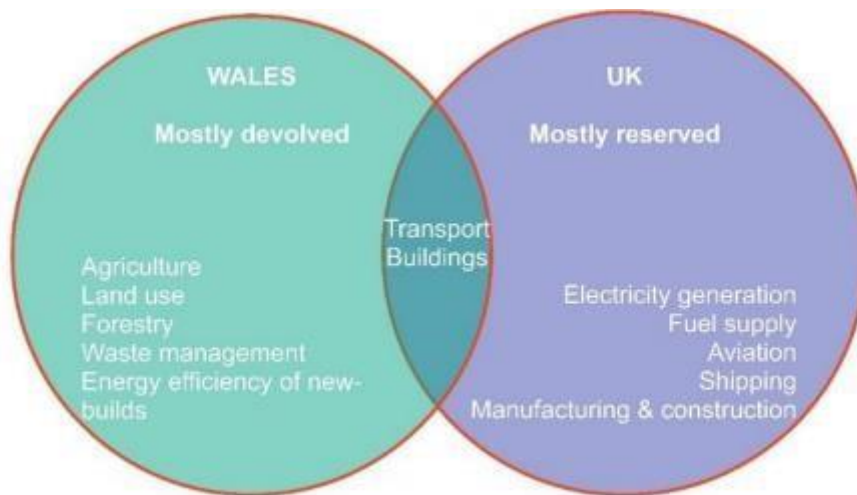
The fact that none of these goals explicitly refers to innovation is because the Welsh Government wanted innovation – technological as well as social innovation – to inform each and every goal, as opposed to the innovation strategy being a stand alone goal that did so much to undermine it in the past (Delbridge et al., 2021). Many of these well-being goals reflect the two key priorities of the Welsh Government, namely the twin commitments to the *Well-being of Future Generations Act* and the decarbonization strategy to achieve *Net Zero* by 2050.

The WFG Act is laudable in principle but challenging in practice because the public bodies that are subject to its mandate have been denuded of capacity during a decade of austerity under the Cameron and May governments. The Future Generations Commissioner has found the contrast between promise and practice to be most pronounced in the sphere of public procurement, where the potential for ‘procuring well-being’ has been stymied by a whole

series of factors, including lack of leadership within public bodies, inadequate skills sets and a focus on process rather than outcomes (Future Generations Commissioner for Wales, 2021).

The Net Zero priority is the most significant of all the priorities because, even though the public may not be fully aware of its implications, it will have the most transformational impact on everyday life over the next 25 years, affecting how and where we work, how we travel, what we eat and how we heat our homes and buildings (Welsh Government, 2021e). The Net Zero commitment also highlights better than any other policy sphere the need for good intergovernmental relations because decarbonization involves both devolved and reserved powers as Figure 2 indicates.

Figure 2 Policy Responsibilities for Decarbonisation in the UK



Inter-governmental collaboration is also required in the devolved policy spheres within Wales, where local government is just as important a player as the Welsh Government in implementing policies in agriculture, land use, energy efficiency and waste management etc. that contribute to the Net Zero strategy. Designing strategies has never been a problem in Wales because they have proliferated over the past twenty years; the real problem has been the ‘delivery gap’ between the promise and the practice, an implementation challenge that the OECD attributed to ‘a tendency to work in operational or sectoral silos’ (OECD, 2020: 43).

As the Welsh Government prepares to launch its new innovation strategy it would do well to remember that organizational issues – especially how it relates to and works with its partners in local government, business and civil society – are the most important issues if Wales is to meet its Well-being and Net Zero goals. The new Welsh innovation strategy is expected to appear in Spring 2022 and it will be based on the following five priorities:

- ‘Ensure Wales has a fair share of available research, development and innovation funding and we will work to secure funding levels at least equivalent to those we received historically, via the European Union. We will also work to address historic underfunding from both competitive and non-competitive UK investment sources.
- Deploy research, development and innovation capacity to support our *Programme for Government* focus on climate change, environmental recovery and decarbonisation, including support for local government decarbonisation plans.
- Build our research, development and innovation capacity in health and life sciences while ensuring Wales is a full partner in delivering the UK Life Sciences Vision.
- Develop a new cross-Welsh Government innovation strategy, with a particular focus on driving impact.
- Continue to grow Wales’ capacity for excellent research by launching the next phase of *Sêr Cymru*’ (M. Drakeford (2021) – Written Statement: Five priorities for research, development and innovation, 23 November, Welsh Government).

The Subnational level: a new two-tier system

Although local authorities are often perceived to occupy the lowest and least significant rung of the multilevel policy landscape, this is unfortunate because it neglects the fact that local government has two unique functions: (a) it is the main agent of policy implementation and (b) it enjoys the closest proximity to citizens. These two functions will assume ever more importance because policy implementation is crucial to bridging the ‘delivery gap’ in Wales and proximity to citizens is the key to effecting behavioural change at the local level, where low carbon lifestyles need to be framed and enabled and where environmental ‘spillovers’ (where one low-carbon habit can ‘spillover’ to another) can be encouraged through peer-to-peer engagement at community level (Mcloughlin et al., 2019).

In Wales the subnational level is witnessing unprecedented change as local authorities are now working in a new two-tiered system. In addition to their traditional locally-based service functions, they are also regionally engaged in delivering their City and Growth Deals and in the process of becoming Corporate Joint Committees in their respective regions, where they will assume responsibility for strategic planning, transport and economic wellbeing.

As regards its regional context, Carmarthenshire is a member of the Swansea Bay City Region (SBCR). Formed in 2013, the SBCR is a joint venture between four local authorities, Carmarthenshire, NPT, Swansea and Pembrokeshire, and the aim is to deliver the Swansea Bay City Deal (SBCD), which was agreed in 2017. The SBCR is a highly diverse City Region, straddling urban and rural areas with a total population of nearly 700,000, making it the second largest region in Wales after the Cardiff Capital Region. The investment objectives of the SBCD portfolio are threefold:

1. To create over 9,000 skilled jobs aligned to economic acceleration, energy, life sciences and smart manufacturing across the region within 15 years (2017-33)
2. To increase the Swansea Bay City Region GVA by £1.8-2.4 billion through the SBCD by 2033 and contribute to the region achieving 90% of UK productivity levels by 2033
3. To deliver a total investment in the region of £1.15-1.3 billion in the South West Wales Regional economy by 2033

Source: Swansea Bay City Deal (2021)

The SBCD is a partnership of eight regional organisations made up of local authorities, universities and health boards that aims to accelerate economic and social advancement through regional infrastructure and investment funds. The SBCD partners are:

- CCC
- City and County of Swansea Council
- Neath Port Talbot Council
- Pembrokeshire County Council
- Swansea University
- University of Wales Trinity Saint David
- Hywel Dda University Health Board
- Swansea Bay University Health Board

This section does not address the minute details of the SBCD, or the challenges facing the South West Wales region, because these have been well documented already (SQW, 2021) (SBCD, 2021; SQW, 2021). However, it is worth highlighting the pivotal role that CCC occupies within this new regional architecture and in the governance of the SBCD itself. As well as being the Accountable Body for the whole City Deal, CCC is also the lead authority for 4 of the 9 SBCD projects as we can see from Figure 3 below.

Figure 3 SBCD Project Portfolio and Lead Organisation

Lead Organisation	Programme / Project	Strategic theme
Carmarthenshire County Council	Yr Egin	Economic Acceleration
	Skills & Talent	Economic Acceleration
	Digital Infrastructure	Economic Acceleration
	Pentre Awel (LS &WB Village)	Life Science & Well-being
City and County of Swansea Council	Swansea Waterfront	Economic Acceleration
	Life Science, Well-being and Sport Campuses	Life Science & Well-being
Neath Port Talbot Council	Homes as Power Stations	Energy
	Supporting Innovation and Low Carbon Growth	Smart Manufacturing
Pembrokeshire County Council	Pembroke Dock Marine	Energy

Source: Swansea Bay City Deal (2021)

CCC plays a distinctive role in the SBCD arrangements on two counts because it is the lead organization on more projects than any other local authority and its projects involve a combination of economic development and health and wellbeing that cater for and resonate with the entire region, as opposed to Swansea's projects for example, which are largely confined to its own local jurisdiction.

Although it is too early to judge the success or otherwise of the SBCD projects, what is already clear is that the biggest challenges facing the region are twofold: (a) how to fashion a coherent and effective regional innovation ecosystem from eight somewhat disparate partners and (b) how to mobilise sufficient investment sources, especially from the private sector, because the Business Case freely concedes that 'the City Deal cannot be successfully delivered without the engagement of and collaboration with the private sector' (Swansea Bay City Deal, 2021: iv).

As regards the local dimension of the two-tier system, the business development function is the most pertinent to innovation and local economic development. But this business development function occupies a paradoxical status: although it is the most critical function of all from an economic development perspective, it remains a *non-statutory* function of local government. This non-statutory status helps to explain why many local economic development departments have been so severely reduced in recent years, denuded by a decade of austerity-driven budget cuts.

Although all local authorities have been affected in this way, CCC is especially challenged because it has one of the most ambitious economic recovery plans in Wales and this exacting

strategy places extra demands on its internal capacity and resources. To conclude this section, we briefly consider three ways in which CCC is seeking to engage more effectively with its local business community – through public procurement, planning policy, and business support.

As public procurement is addressed in more detail in chapter 4, here we simply want to register its strategic significance. For the past 20 years public procurement has been touted as a panacea for many problems in Wales, be they economic, social or environmental problems. But reforming procurement *practice* is easier said than done because a culture of low-cost contracting is deeply embedded in the Welsh public sector; so much so that a recent review of public procurement found it falling short of meeting the WFG goals (Future Generations Commissioner for Wales, 2021). But the potential of public procurement is clear for all to see. In the case of Carmarthenshire for example, CCC spends nearly £250 million per annum on goods and services, with adult social care accounting for 34% of the total and construction accounting for another 20%. As we will see in chapter 4, CCC is now pursuing a series of reforms to achieve two goals: to enhance the *amount* that is spent in the county and to maximise the *impact* of that local spend.

Planning is another local government policy that has a direct impact on the local business community because of its capacity to either foster or frustrate economic development. It is no secret that planning has been a problematical function in Carmarthenshire for many years, triggering perennial complaints from the business community and compromising local regeneration efforts (Audit Wales, 2021). Fortunately, these problems are now being addressed in a methodical fashion and a series of reforms has been put in place which will reduce the backlog of applications and expedite major projects that have a significant economic impact. Through these reforms CCC aims to make the planning function part of a more integrated and sustainable place-making process rather than the silo-like function it has been in the past.

Finally, there is business support. Although this is a non-statutory function as we have seen, it has a higher status in CCC than in many other local authorities in Wales. As we noted in the introduction, CCC has been one of the most pro-active authorities in commissioning a postCovid Economic Recovery and Delivery Plan and in establishing an independent Business Advisory Group composed of key figures from the local business community in the county (CCC, 2021). Being a county that contains a mix of urban and rural communities, the business support function needs to strike a judicious balance between its sectoral and spatial focus. On the sectoral front the plan has chosen to focus on a combination of foundational sectors and high-growth sectors as in Figure 4 below.

Figure 4 Sectoral Focus of the Economic Recovery and Delivery Plan

Localism/foundational economy	High growth competitive sectors
<ul style="list-style-type: none"> • Micro and small business growth and upscaling • Building strong sustainable & resilient communities • Closer to home solutions • Better-paid local employment • Strengthen local procurement & supply chains • Innovation through local university/institutions • Transform hard hit sectors - retail, hospitality, tourism, culture - to adapt and find new markets • Green tech & energy efficient homes 	<ul style="list-style-type: none"> • Focused activity that supports these sectors • Scale-up mid-sized, grounded firms • Advanced materials & manufacturing. • Creative Industries - Welsh language media • Green economy Inc. low carbon energy & reduction. • Health, care & life sciences. • Agriculture, food production & processing.

As we explore the prospects for some of these sectors in chapter 4, suffice it to say that the high-growth sectors tend to be the targeted sectors of many other cities and regions in the UK, which means that CCC needs to be more granular and targeted with respect to its USP and with what it chooses to support *within* each of these sectors.

As regards the spatial focus, which receives less attention in the Economic Recovery and Delivery Plan, CCC plans to build on its Ten Towns programme, an initiative that emerged from a Rural Affairs Task Group inquiry. The rural question is much more important in Carmarthenshire than it is in Wales generally because 61% of its population is deemed to be ‘rural’ compared to just 33% nationally (Carmarthenshire Rural Affairs Task Group, 2019). The Ten Towns strategy is funded through the 2014-2020 Rural Development Programme and such funding will end in 2023, raising big questions as to how business support and economic development will be resourced in the county when EU funding ends. Currently business support in Wales (covering Business Wales and the SMART suite of innovation schemes etc) is funded to a tune of £27 million per year from EU funds and there is currently nothing in place to replace these funds.

But as we shall see later, future funding for business support needs to be framed as one part of a larger question about the *regional innovation ecosystem* in West Wales, the place-based networks through which local partners work in concert to achieve collectively what none can achieve on its own. Although CCC has done relatively well in securing project funding from the first tranches of the Levelling Up Fund and the Community Renewal Fund, these modest projects are no substitute for securing the much larger funding streams that will come from the significant increase in R&D funding, which is likely to fund Innovation Deals and the like,

building on successful place-based innovation schemes like the Strength in Places Fund (Jones, 2021).

The business support system in the county and the region needs to be fit for purpose if it wants to take advantage of this new funding era. This era will set a premium on innovation-led research, and the D side of the R&D spectrum, meaning that partnerships between universities and enterprises will be prioritised along with place-based consortia in which local authorities can play an important role in convening and managing the consortia. As all organisations have capacity constraints, the way forward is to make a virtue of necessity by pooling resources to find joint solutions to common problems. CCC cannot be expected to engage with all the businesses in its county on its own slender resources, still less to generate granular knowledge of these businesses, but it can do these things in concert with its partners in a regional innovation ecosystem – assuming the county and the region have the wherewithal to fashion such a system. This conception of CCC as (part of) an innovation ecosystem is a central thread to our report.

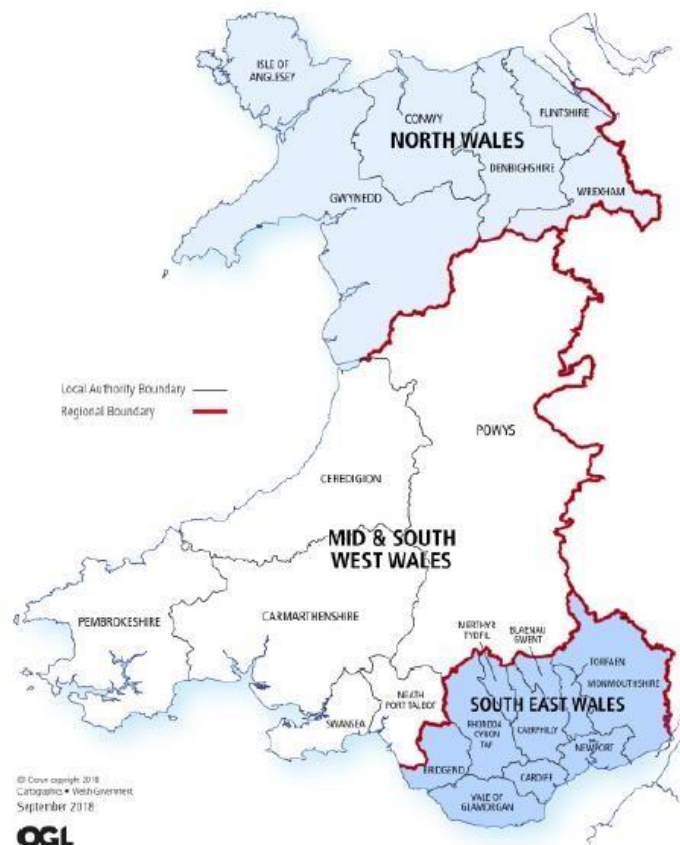
3. The local and regional context for innovation

This section draws together key socioeconomic statistics on Carmarthenshire with the intention of providing contextual information in support of the Local Innovation Strategy. It does not report on traditional metrics of innovation such as research and development, as these are not collected at the level of local authorities (in Wales), but does provide an indication of how well firms in Carmarthenshire are engaging with the innovation support programmes of Welsh Government and Innovate UK.

Socio-economic position

Figure 5 shows that Carmarthenshire and the wider South West region have a high proportion of sparse settlements relative to the most urban parts of Wales. It is estimated that there are some 112,921 people living in rural areas of the local authority area, representing 61% of its population (Carmarthenshire Rural Affairs Task Group, 2019).

Figure 5 Settlements in Wales by rural-urban classification, 2011



Source: Statistics for Wales (2020) <https://gov.wales/sites/default/files/statistics-andresearch/2020-05/summary-statistics-regions-wales-2020-629.pdf>

The population of Carmarthenshire (188,171, 2019) has grown steadily in recent decades though natural growth (fertility/mortality) as well as population in migration (see Figure 6). Such net inflows have been highest in the 30-65 age group

Figure 6 Carmarthenshire internal migration flows

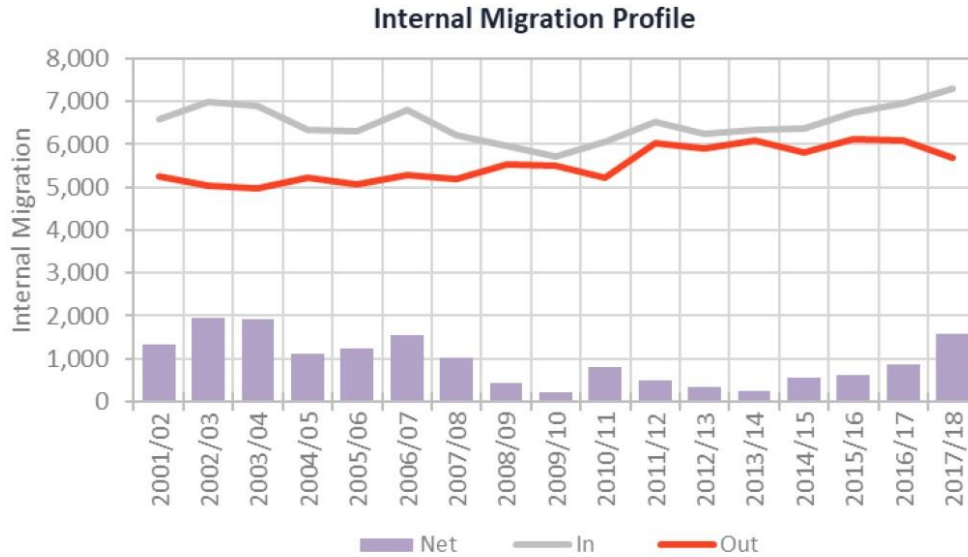


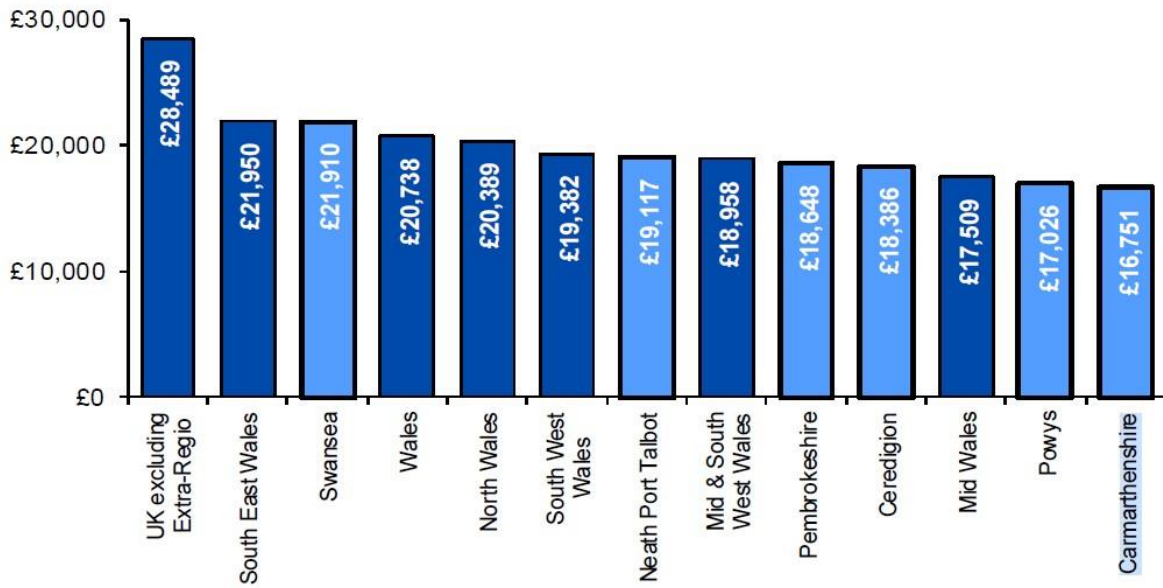
Figure 5: Carmarthenshire UA internal migration flows

Source: Edge Analytics (2019)

<https://www.carmarthenshire.gov.wales/media/1221659/edge-analytics-addendum-2019english.pdf>

GVA per head provides an indicator of the region’s economic prosperity. Here Carmarthenshire’s figure of £16,751 falls below other parts of the South West region and the Wales average. Caution is required in interpreting regional GVA figures, however, as it can be influenced by factors such as commuting (see Experian, 2006). In recent years analysis reported in the Carmarthenshire Economic Recovery & Delivery Plan (CCC, 2021) suggests that GVA fell at the start of the pandemic, but is expected to recover to its pre-pandemic levels within three years (in the most optimistic scenario).

Figure 7 GVA per head, 2018

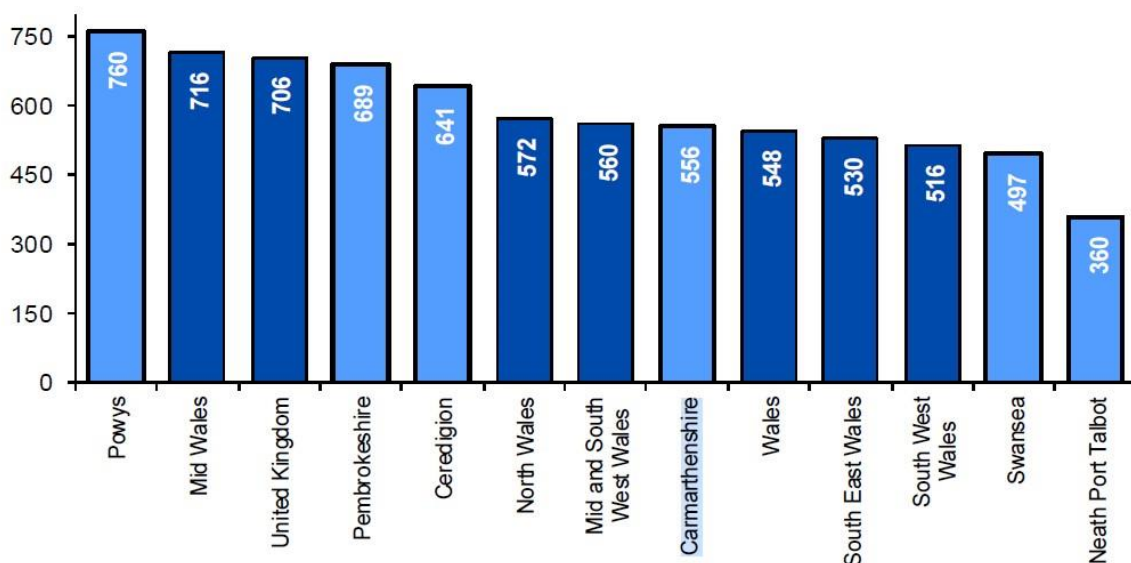


Source: National Statistics, 2020

<https://gov.wales/sites/default/files/statistics-and-research/2020-07/regional-economicand-labour-market-profiles-july-2020-208.pdf>

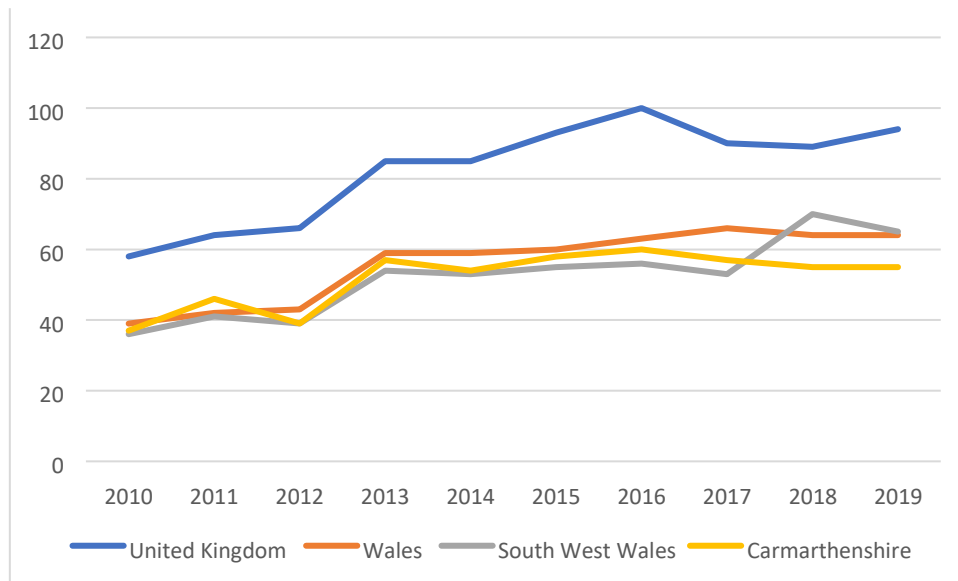
The business stock of Carmarthenshire is a further measures of its economic dynamism. Figure 8 suggests that Carmarthenshire is consistent with the Wales average with respect to enterprises per 10,000 residents. In relation to the birth of new businesses, however, Carmarthenshire has fallen behind the Wales and South West averages, both of which are some way behind the UK average (see Figure 9).

Figure 8 VAT/PAYE enterprises per 10,000 residents, 2018



Source: National Statistics, 2020 (<https://gov.wales/sites/default/files/statistics-and-research/2020-07/regional-economicand-labour-market-profiles-july-2020-208.pdf>)

Figure 9 Births per 10,000 of the population aged 16 to 64, 2020



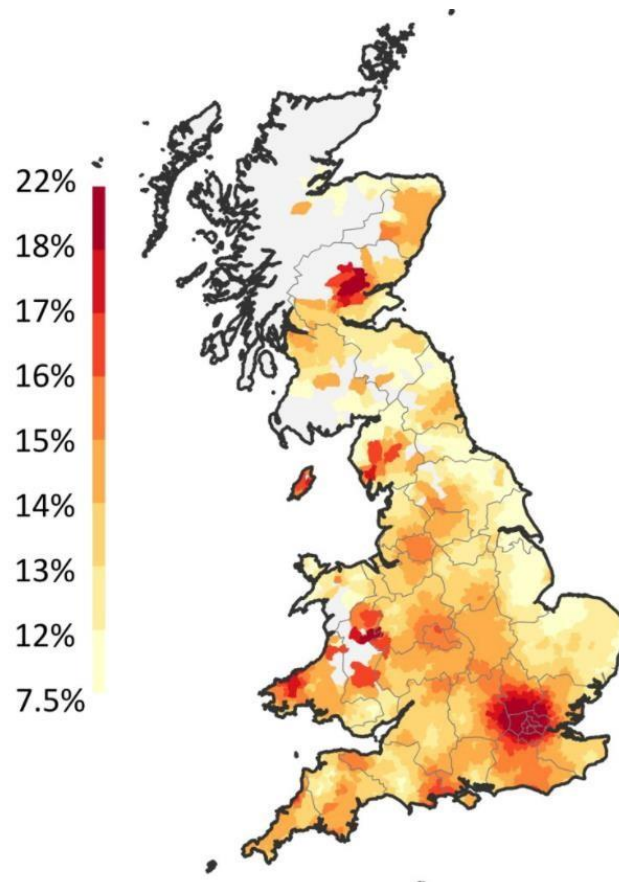
Source: StatsWales (2020)

<https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Businesses/Business-Demography/businessbirths-by-area-year>

There is some evidence, however, that the potential entrepreneurial capacity¹ of the region may be great than Figure 10 suggests, with Carmarthenshire and the wider South West Wales amongst the parts of Wales with high entrepreneurship potential (Mewes & Ebert, 2021).

¹ Drawn from a survey of 368,364 participants in the UK, who are not yet self-employed, but who report 'Owning my own business as an important goal in their life' (Mewes & Ebert, 2021: 334).

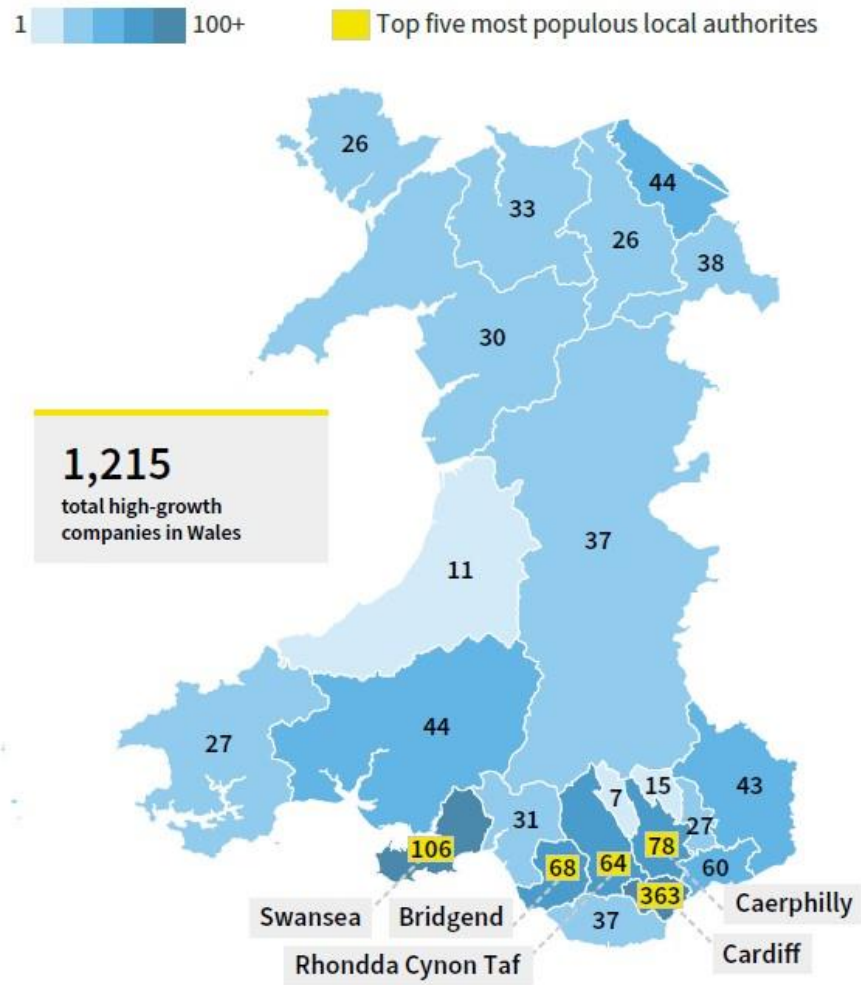
Figure 10 The share of potential entrepreneurs across postcode sectors in Great Britain



Source: Mewes & Ebert (2021)

High growth businesses that have received equity investment provide a further indicator of the dynamism of Carmarthenshire and the wider city region. Figure 11 shows that Carmarthenshire has 44 such companies, with this total largely consistent with other rural and semi rural regions of Wales, but some way behind the totals reported in the most populous areas of Wales. This is a policy area where CCC are seeking to review its supports for high growth firms, as part of its Economic Recovery Programme (CCC, 2021).

Figure 11 Number of high-growth companies per Welsh local authority, 2011-2020



Source: Beauhurst (2021)

Table 1 provides further insights into the economic structure of Carmarthenshire. It shows that the majority of firms (like elsewhere in Wales) are micro in size (employing fewer than 9 employees). It does, however, have a greater average number of small, medium and large firms than other areas of Wales and the UK.

Table 1 Enterprises by size band (% of total), 2019

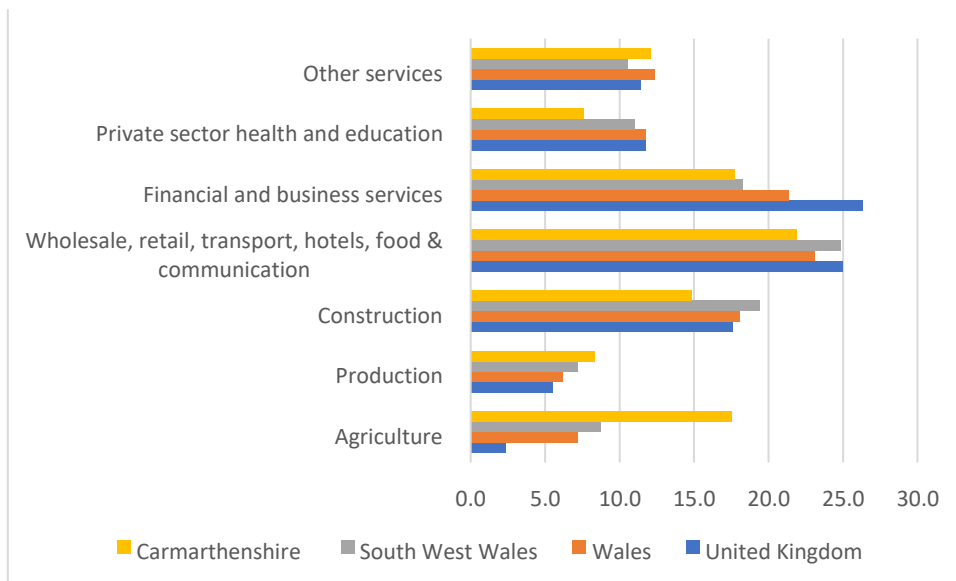
	Micro (0 - 9)	Small (10 - 49)	Medium (50 - 249)	Large (250 +)	All size bands
United Kingdom	96	3.3	0.6	0.1	100
Wales	95	3.6	0.8	0.6	100
South West Wales	94.2	3.8	0.9	1.1	100
Carmarthenshire	93.3	3.9	1	1.9	100

Source: StatsWales (2019)

<https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Businesses/Business-Structure/Headline-Data/enterprises-by-sizeband-area-year>

The sectoral focus of Carmarthenshire’s businesses, as reported in Figure 12, shows that the region has a greater proportion of agricultural enterprises (17.5%). It also has strong concentrations of enterprises in the production sector and other services. These figures reflect their rural character of the county, as highlighted in Figure 5.

Figure 12 Enterprises by industry (% of total), 2019



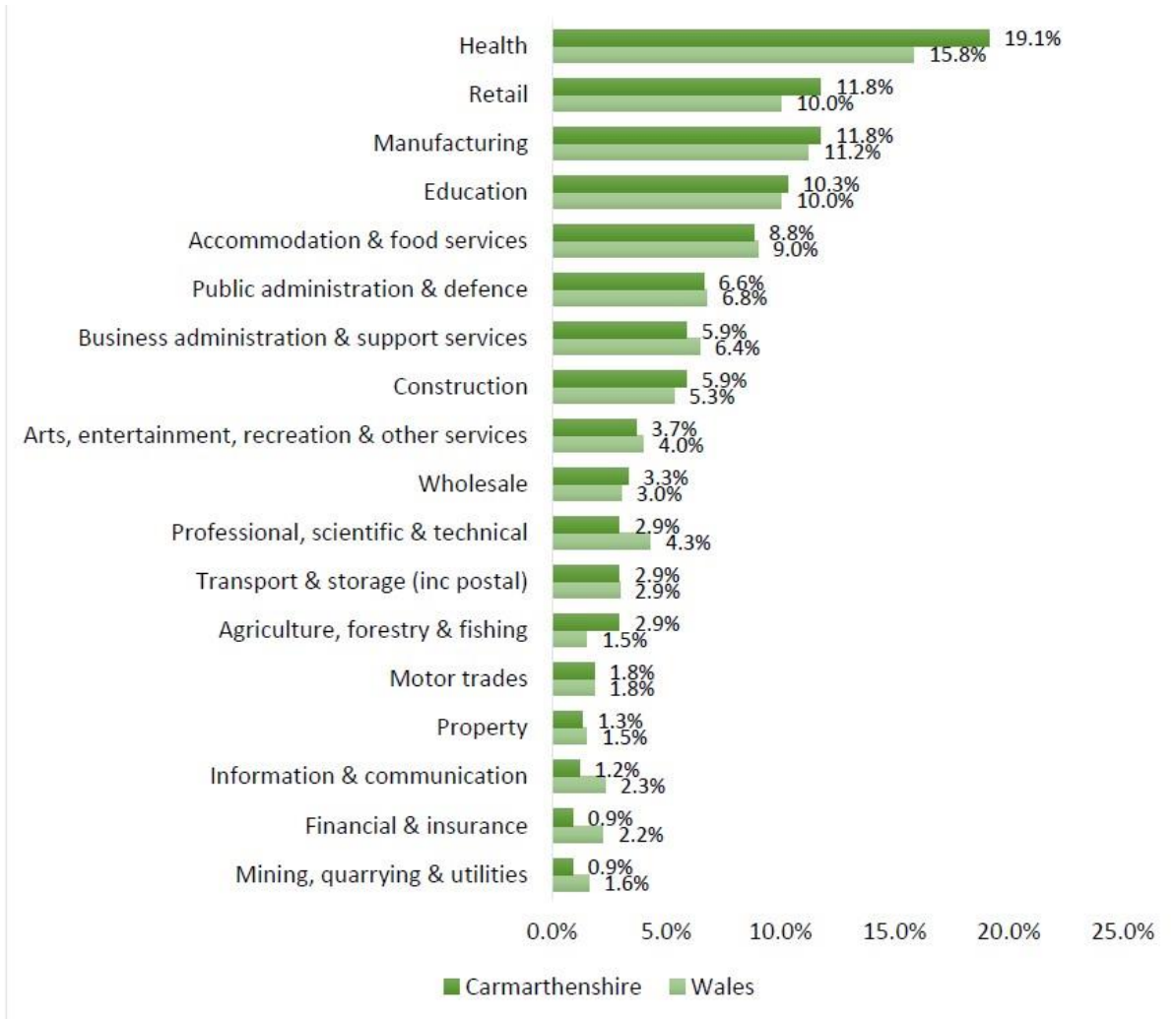
Source: StatsWales (2019)

<https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Businesses/Business-Structure/Headline-Data/enterprises-by-industry-sic2007sizeband-area>

The breakdown of employment share in key sectors in Carmarthenshire and Wales. It shows that the employment percentage exceeds the Welsh average in foundational sectors such as Health, Retail, agriculture, forestry education and fishing. Indeed, employment in agriculture,

forestry and fishing is almost double the national average. In contrast, employment in sectors such as information and communication, finance and insurance, professional, scientific and technical services are all below the Welsh average (see Figure 13).

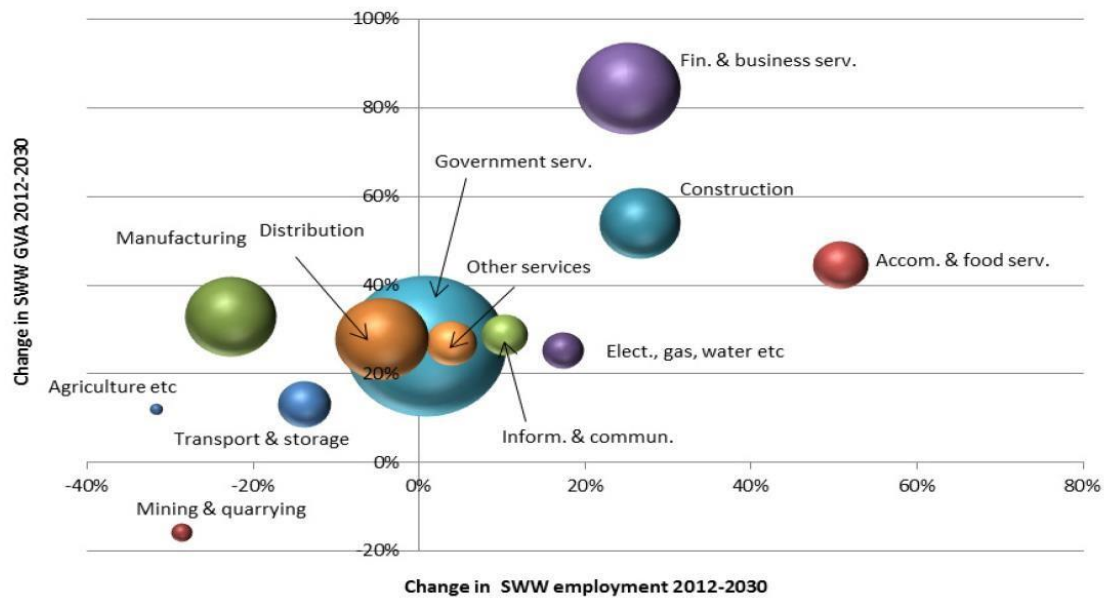
Figure 13 Business sector employment breakdown in Carmarthenshire benchmarked against Wales



Source: Carmarthenshire Rural Affairs Task Group (2019)

Analysis of the sectoral composition and prospective development of the wider South West region of Wales suggest that financial and business services are expected to grow in the coming decade, as are construction and accommodation and food services., Other sectors, such as government services are likely to remain important given their existing strength (Figure 14).

Figure 14 Sectoral change in GVA / employment in South West Wales, 2012 to 2030

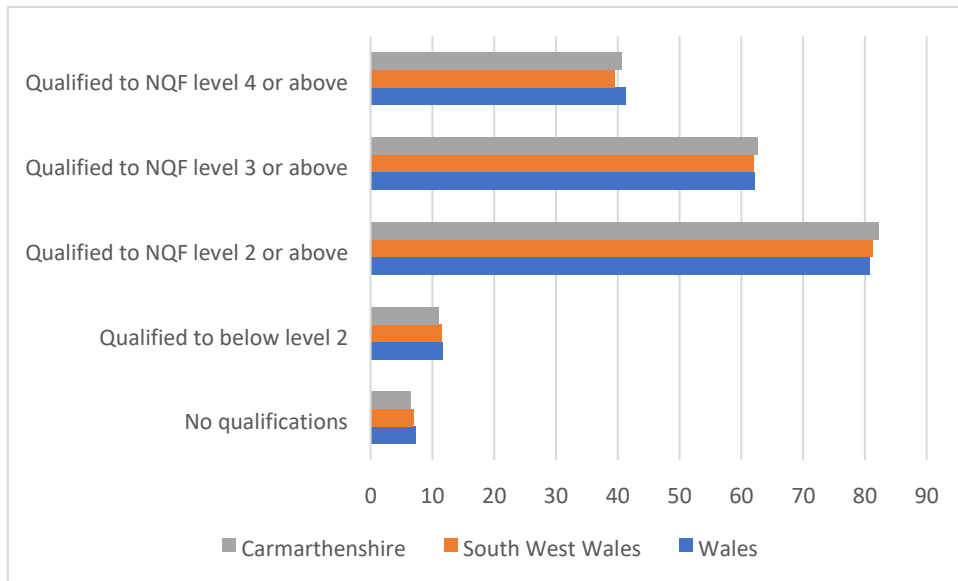


Source: Swansea Bay City Region

https://www.swansea.gov.uk/media/2815/Swansea-Bay-City-Region-Economic-Regeneration-Strategy/pdf/Swansea_Bay_City_Region_Economic_Regeneration_Strategy.pdf?m=1630588190013

Human resources are a component of a dynamic economy. Here Figure 15 shows that Carmarthenshire performs well against the highest qualification levels – NQF 2-4+. Such skills have been highlighted as important contributors to both productivity and innovation (Rao et al., 2002).

Figure 15 Highest qualification levels of working age adults by qualification, 2020 (%)



Source StatsWales (2020)

<https://statswales.gov.wales/Catalogue/Education-and-Skills/Post-16-Educationand-Training/Lifelong-Learning/QualificationLevels/highestqualificationlevelofworkingageadults-by-regionsofwales-qualification>

While these indicators point to the peripheral nature of Carmarthenshire’s economy, they also show the diversity of its economy (in spite the high proportion of agricultural enterprises), the presence many small, medium and large firms, and evidence of a high level of qualifications amongst the workforce. These indicators speak to the innovation context of Carmarthenshire, but also highlight some of the challenges and opportunities that may enable or constrain such activity.

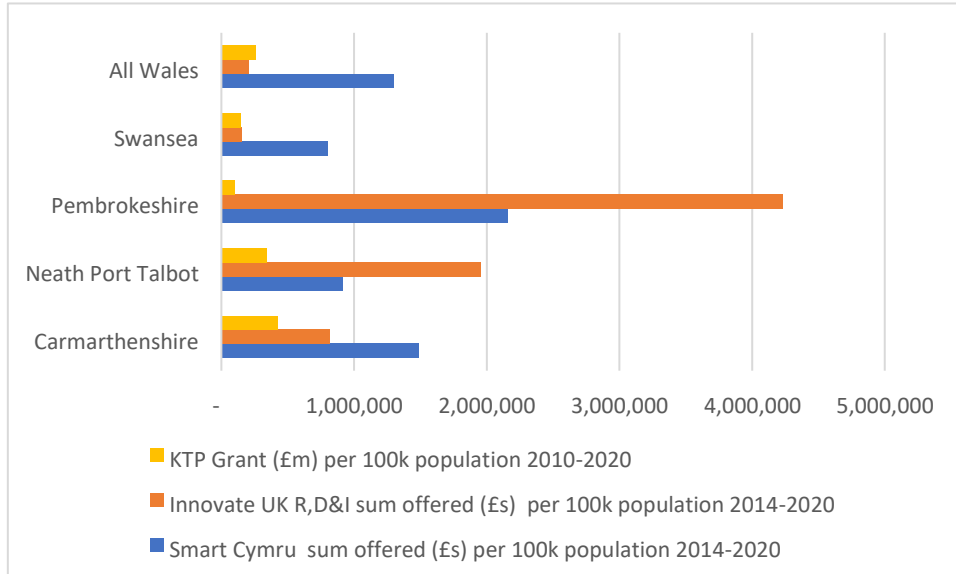
Innovation support grant performance

A range of support for business and higher education institutions to innovation is available from Welsh Government and UK organisations such as Innovate UK. Data available from these sources of funding provides an insight into how firms in Carmarthenshire (and the wider city region) are innovating. Figure 16 profiles use of the three main funding sources: Smart Cymru – Welsh Government’s primary funding for innovation projects², Innovate UK’s equivalent funding, and KTP awards for collaborative knowledge transfer projects³. These schemes are available to firms in Wales. This data shows that when adjusted for population Carmarthenshire firms perform above the all Wales averages for all indicators, and within the

² <https://businesswales.gov.wales/expertisewales/support-and-funding-businesses/smartcymru> ³ <https://businesswales.gov.wales/expertisewales/search-expertise-within-universities-andcolleges/knowledge-transfer-partnerships-ktp>

City Region only Pembrokeshire performs better in relation to Smart Cymru and Innovate UK³ funding.

Figure 16 Value of innovation support grants per 100K population, Swansea Bay City Region, 2014-2020



Source: Delbridge et al. (2021)/ Neil Roche, WERU Welsh Government

These sources of data point to uneven levels of innovation activity in the city region partners. While much of this picture reflects the underlying characteristics of the firm population and presence of higher and further education partners, there may be potential for this comparative performance to be strengthened through greater support for innovation in the county by improving connections to the wider ecosystem of innovation support in Wales.

4. Deep dive analysis

Digital

Introduction

Rural areas have long faced challenges of ensuring infrastructure parity with their urban counterparts. Such disparities have been linked to the comparatively higher costs associated with deploying broadband in harder to reach areas, but also network economics that mean subscriber bases are much smaller than those in urban areas (Grubestic & Mack, 2016). Improving connectivity in Wales has, in recent years, focused on supporting deployment of digital infrastructure and addressing so-called not spots through programmes such as Superfast Cymru and its successors. This has helped to improve availability of superfast broadband availability to just over 95% of Wales (Ofcom, 2020). It is increasingly recognised, however, that digitalisation is not simply a question of deploying digital infrastructure, it is also a question of how business and individuals make use of it. Here such exploitation has also

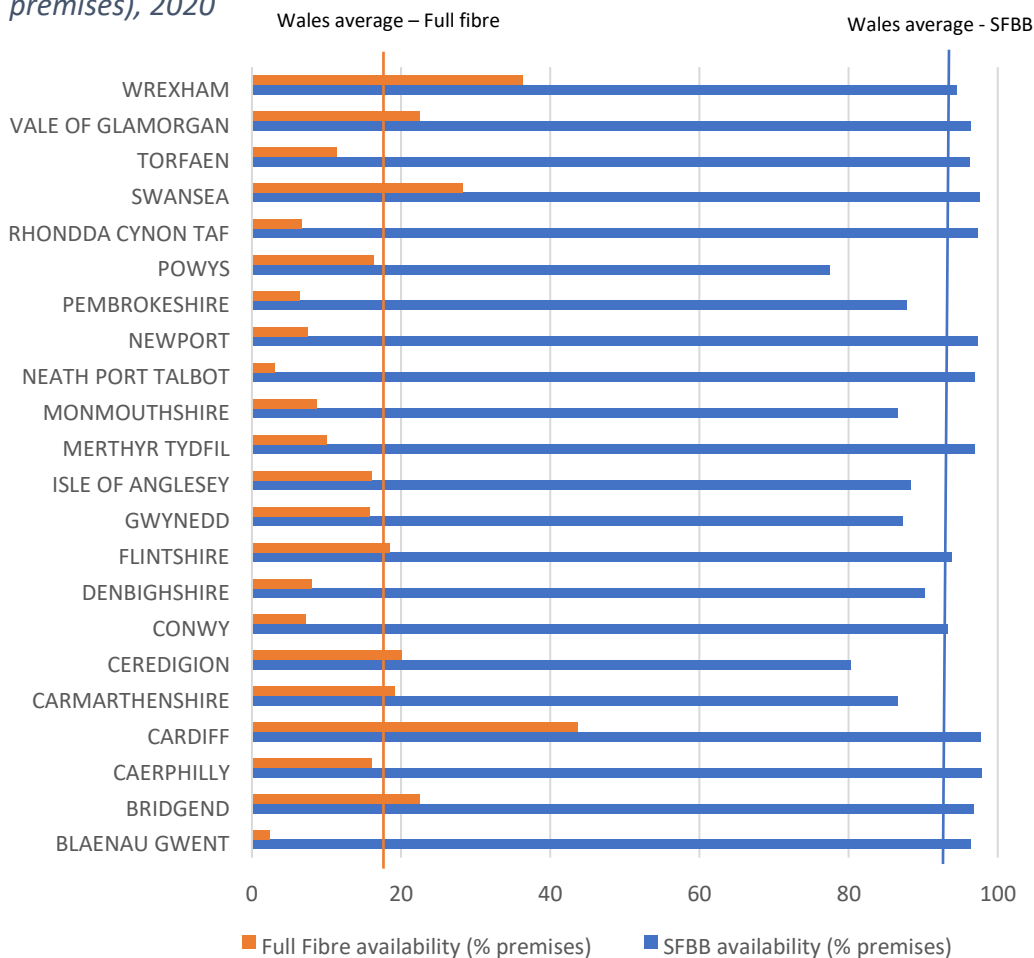
³ <https://www.gov.uk/government/organisations/innovate-uk>

been supported by the Welsh Government, through programmes such as the Superfast Broadband Business Exploitation programme, delivered by Business Wales (Miller & Greenwood, 2019), alongside online support from organisations such as BT and Google⁴.

Current position

Carmarthenshire is a predominantly rural area with comparatively sparse population. These features have shaped its deployment of superfast broadband access, where despite substantial improvements it continues to lag behind Wales averages for both superfast broadband access – denoted by the vertical blue line (see Figure 17). These figures for fibre, however, are just above the Wales average (vertical orange line), and likely to be influenced by deployment support from Superfast Cymru and work of the so-called Alt Nets. The availability of 4G mobile connectivity also lags more urban areas of Wales and is consistent with other rural areas of Wales (Figure 18). In the case of both fixed and mobile broadband connectivity the challenges faced by Carmarthenshire are linked to its rurality, with evidence highlighting the comparatively large cost of broadband installation to rural premises relative to their urban counterparts (Woods et al., 2021).

Figure 17 Fixed broadband coverage -superfast broadband and full fibre availability (% of premises), 2020



Source: Ofcom (2020)

⁴ <https://www.bt.com/skillsfortomorrow/>
<https://learndigital.withgoogle.com/digitalgarage>

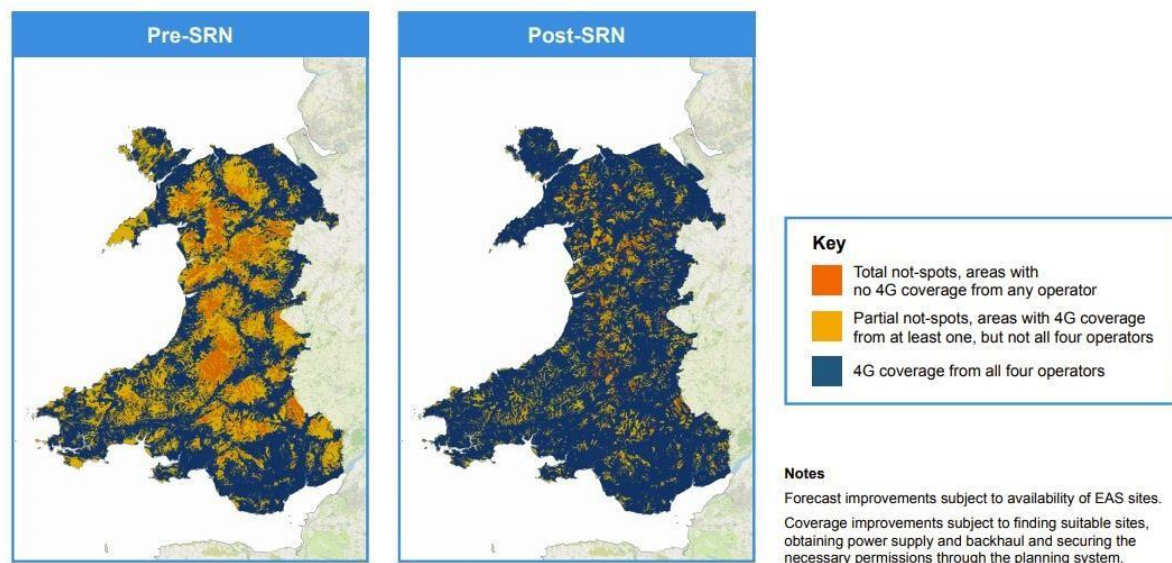
Figure 18 4G geographic coverage by Welsh Local Authority, 2020

Local Authority Wales	% Coverage
Gwynedd	46
Conwy	46
Powys	49
Ceredigion	53
Monmouthshire	57
Carmarthenshire	61
Neath Port Talbot	68
Denbighshire	68
Anglesey	72
Pembrokeshire	74

Source: Ofcom, 2020

In addition to programmes such as Superfast Cymru and its successors support for broadband has also been accessed by the Swansea Bay City Deal. This includes the provision of a £55 million Digital Infrastructure programme to further address not spots. Led by Carmarthenshire this is focused on connectivity improvements for households and businesses in both urban and rural areas (Carmarthenshire Rural Affairs Task Group, 2019). Carmarthenshire is also engaging in the UKG’s Shared Rural Network Scheme (via the UK’s four mobile operators) to improve 4G availability in rural areas (Wilkinson, 2021). It is expected to improve 4G connectivity in South West Wales from an average of 79% to 88% by the end of the programme in 2025 (Figure 19). That said, Ofcom have recently estimated that some 1% of premises in Carmarthenshire are unable to receive ‘decent’ broadband (10mbts download speed and 1mbts upload speed) from either a fixed or mobile connection (Ofcom, 2020).

Figure 19 Shared Rural Network coverage forecast improvements in Wales



Source: <https://srn.org.uk/forecast-coverage-improvements/>

Future challenges and opportunities

Fibre deployment represents a significant policy priority for the UKG, and is currently in the early stages of a £5 billion programme to ensure fibre access for more than one million hard to reach premises⁵. This intends to support the roll-out of fibre with a target of ensuring 85% gigabit coverage by 2025. Plans for Wales, however, have yet to be finalised. While the focus, to date, has been on England, the completion of Welsh Government’s Open Market Review is likely to precede deployment planning in Wales. To this end the opportunity for Carmarthenshire will be one of working with both Welsh and UKG to ensure that it is able to access such funding, and that it works to minimise the known challenges of deploying fixed broadband in rural areas, such as street works and access across land for cable and other infrastructure works (Henderson & Roche, 2020). Here the Council has developed a ‘barrier busting’ group to draw together key officials to discuss deployment challenges and solutions.

Connectivity also remains an ongoing challenge with respect to next generation technologies. The local authority is in the early stages of creating a LoRaWan network across the local authority area. This has the potential to act as a test-bed for innovative applications such as the addition of sensors to objects such as bins, quad bikes, farm gates in order to monitor use and security. Such applications represent the early stages of the Internet of Things (IoT). While there is a case for facilitating the creation of such a network future support for use cases should, where, possible be aligned to council priorities and agendas such as smart towns⁶. Other future technologies in this space include 5G networks. Here the same deployment challenges facing fixed and mobile (4G) connectivity are relevant. The opportunities of 5G relate not only to faster mobile downloads, but in the range and services that may be enabled in key sectors such as education, health, business (Curwen & Whalley, 2021). The use cases

⁵ <https://www.gov.uk/government/publications/project-gigabit-phase-one-delivery-plan>

⁶ <https://www.hwbmenter.cymru/en/smart-towns>

required to support 5G deployment in rural areas, however have yet to be established (Oughton & Frias, 2018). This is where rural test-beds funded by the DCMS/Welsh Government represent opportunities for Carmarthenshire to learn, but also contribute to with additional localised test beds focusing on applications relevant to the local authority area. Such work should be coordinated with existing 5G test-beds across to ensure synergies and avoid duplication.

The challenge of helping individuals and organisations to make use of new digital connectivity represents a wider opportunity for Carmarthenshire to raise digital skills, but also the innovation potential of its firms. Here the recently announced £30 million Swansea Bay City Deal Skills and Talent programme for South West Wales offers the potential to support the development of such skills in Carmarthenshire, targeting sectors with the highest requirements⁷. In addition, Carmarthenshire should seek to interact with the forthcoming iteration of Business Wales. This is likely to incorporate a greater degree of digital exploitation support than earlier Business Wales programmes. The opportunity here, will be to ensure that such programmes have a greater presence in the local authority area. Other support that could be harnessed include BT's Skills for Tomorrow programme and Lloyds Bank (Lloyds Bank Academy), targeting SMEs and charities, as well as other online provision such as Google Garage and Amazon Academy). There may also be opportunities to build on current activities to establish digital maker hubs across the county to provide greater support for digital skills in the heart of rural communities (CCC, 2017). Such an approach has already been piloted in Monmouthshire, and lessons should be sought (Woods et al., 2021).

Raising digital skills represents a cross-cutting opportunity that has the potential to bring productivity and innovation benefits to firms in Carmarthenshire (WERU, 2020), as well as the potential for new business practices and business models in both the public and private sectors. For rural areas such connectivity and use have been linked to reducing social loneliness (Hart, 2016), but also the potential to attract skilled migrants and entrepreneurs (Norris & Henderson, 2019). Access to broadband connectivity also offers household benefits such as access to education, health and other public services. Such digital connectivity benefits have been highlighted during the COVID-19 pandemic, where working from home has seen an increase in broadband usage⁸.

Digital skills development and greater digital connectivity also offer potential to support strategic projects in the county such as the Yr Egin, where plans are in place to develop a digital and creative hub at the UWTSD in Carmarthen⁹. The plans for Pentre Awel (see Health and Wellbeing deep dive) also include opportunities to exploit such digital connectivity to support innovative service offerings and new product development.

⁷ <https://businessnewswales.com/30-million-boost-for-developing-skills-in-south-west-wales/>

⁸ <https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2020/uk-internet-use-surges>

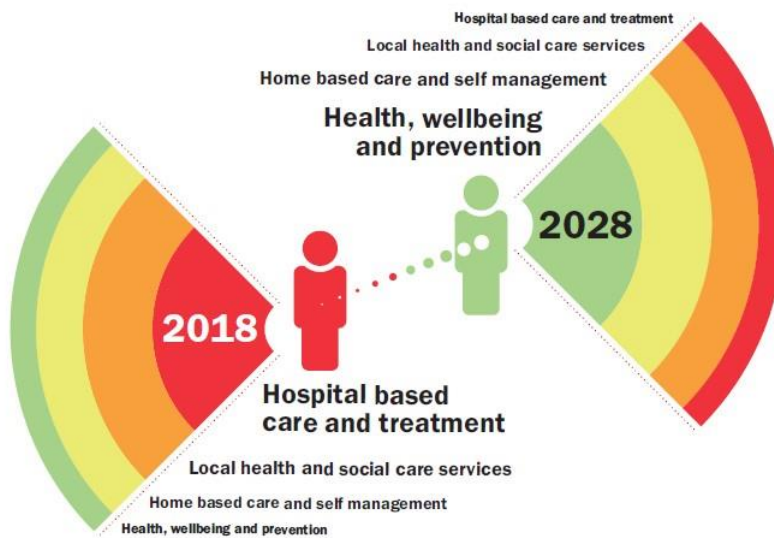
⁹ <https://www.swanseabaycitydeal.wales/projects/canolfan-s4c-yr-egin/>

Health and wellbeing

Introduction

Health and wellbeing represent one of the grand challenges facing Wales, with its ageing population, long term health issues, such as chronic conditions and mental health, and increasing requirements for specialist treatment (Welsh Government, 2015). As a devolved area of policy responsibility Welsh Government (and its partners) has substantial agency by which to innovate in its response to this grand challenge area. The Healthier Wales strategy sets out a vision for innovation at the heart of healthcare, with plans for the greater integration of health and social care, and the provision of services close to home rather than in hospitals Figure 20. This presents a particular challenge for rural areas, where dispersed population adds to the challenge of delivering such healthcare plans locally, but also one where innovation offers opportunities to support service delivery and pre-empt condition exacerbation.

Figure 20 A Healthier Wales strategic plan



Source: Welsh Government <https://gov.wales/sites/default/files/publications/2019-10/healthier-wales-action-plan.pdf>

The move towards greater integration of health, social care and wellbeing is one area where partnership-based service provision is being developed across Wales, as well as links to other policy agendas such as the Economic Impact Plan. The COVID pandemic has, however, illustrated that the health and social care sector is well placed to produce innovative responses to such challenges.

Current position

There are a range of organisations and initiatives supporting innovation in the healthcare sector in Carmarthenshire forming what has been described as ‘life science and health ecosystem’ in the wider South West Wales (Davies et al., 2018). This includes organisations

responsible for healthcare and social care provision, as well as engagement with the third sector, and associated support for both organisational and technological forms of innovation in the county:

Hywel Dda University Health Board (HDUHB) is the main agency responsible for healthcare provision in Carmarthenshire. Its research and innovation department has responsibility for a range of innovation activities, incorporating clinical trials, research, medical technology evaluation, organisational development and workforce training. To this end its focus is helping to improve the effectiveness of clinical processes, but also bringing innovation to bear on the wider objectives of supporting patients outside of hospitals / in the community. It has recently established *Tritech*¹⁰ to give a focus to its commercialisation activities. This brings together the HDUHB's in house capacity with expertise spanning clinical engineering, research, and innovation, and provides a front door for companies to explore collaborative opportunities. HDUHB recognises the importance of interacting with partners throughout the region and across Wales. This includes extensive research and innovation collaborations through initiatives such as ARCH (A Regional Collaboration for Health), and its recently signed Memorandum of Understanding with Swansea University and University of Wales Trinity Saint David (UWTSD). The latter will support commercialisation of MedTech, offer doctoral studies and a Digital Professional Masters¹¹.

Pentre Awel in Llanelli is being developed by CCC, with partial funding from the Swansea Bay City Deal (Hywel Dda University Health Board, 2021a). It is being built on an 83 acre site, and brings together facilities for assisted living, life science businesses and higher education, with healthcare and leisure. Informed by a detailed Health Impact Assessment the *Pentre Awel* plans aim to improve health and wellbeing by addressing the wider determinants of health in areas such as education, employment, housing, access to services and community cohesion. It will be delivered through an integrated service delivery model for health and wellbeing in which *Pentre Awel* will act as a hub and spoke for service delivery, with 370 units of assisted living, health and wellbeing support (Swimming and hydrotherapy pools, sports hall, multipurpose studios), and linking the Health Board to other social care across Carmarthenshire. This integration was brought to bear through joint service planning between leisure and health and co-design of facilities, and will allow it to offer healthcare services such as rehabilitation to the community more effectively, improving both health outcomes but also economic benefits as people take charge of their own health in the community. The planning for *Pentre Awel* is also exploring the role that digital technologies might play in responding to the challenges of COVID greater use of provision of telemedicine. It is also planning to act as a test-bed for MedTech evaluations (in collaboration with *Tritech*).

It is anticipated that innovation 'spokes' will be added to *Pentre Awel* via links to health and integrated care centres, as well as specialist centres such as the Welsh Wound Centre and the Bio Bank. It will also look to establish product development trials based on its resident population. This may be expanded to provide a bigger population to test product developments.

¹⁰ <https://tritech.nhs.wales/>

¹¹ <https://uwtsd.ac.uk/news/press-releases/press-2021/uwtsd-and-hywel-dda-university-health-boardcollaborative-partnership-will-support-the-delivery-of-a-healthier-mid-and-west-wales.html>

Links may also be explored to support care workers to assist residents' access to telemedicine in the community. Other activities relevant to innovation include plans for The Care Academy to be located within Pentre Awel. This is a partnership between CCC, the Health Board and UWTSO and will focus on the delivery of skills across a broad range of healthcare disciplines. Its aim will be to provide a career qualifications pathway and support skills development for new and existing staff in the sector. This will include skills in technological areas such as the enhanced role of digital technologies in healthcare (e.g. remote diagnostics, monitoring, health and telecare). In this respect Pentre Awel reflects the aggregation of critical mass from multiple centres, in contrast to the traditional model of concentrating such activity in a single centre. This could be further enhanced through wider connectivity with integrated care centre proposed across the county, giving the Pentre Awel proposal access to greater number of residents than exist in its immediate locale (Llanelli).



It is anticipated that Pentre Awel will contribute an addition £467.0 million to the City Region over the next fifteen years, plus 1,853 net additional jobs (Swansea Bay City Deal, 2021). The recent announcement that CCC and Pembrokeshire County Council and other local public service providers have secured £19.9million to create town centre hubs that will provide health and wellbeing services in town centres (amongst other services)¹² may further provide opportunities for Pentre Awel to work alongside the planned Carmarthen Hwb. This will provide careful planning, however, to ensure that duplications are avoided and that the wider work of Pentre Awel is not undermined.

Delta Wellbeing provides technology expertise in care and support, to enable people to maintain their independence and quality of life. It was established in 2018, as a trading company of CCC, taking over the responsibilities of the former Careline service. It acts as a single point of contact, and operates as part of a 24/7 social care service. Extensive use of digital technologies are made in delivering its services, which has required it to develop its own digital skills and

¹² <https://newsroom.carmarthenshire.gov.wales/2021/10/chancellor-s-levelling-up-fund-secured-to-createexciting-carmarthen-hwb#.YYAH1J7LeUI>

capabilities and to support residents to enable them to interact with care digitally. Delta Wellbeing has sought to learn from the experiences of social care delivery in Barcelona and the Basque Country (with funding from Welsh Government's Transformation Fund). This has informed Delta Wellbeing's Connect pilot project, which provides a package of support, adapted to an individual's needs, to help them make use of technology enabled care, and to live independently. The ultimate aim of this and other support is to prevent the need for statutory care and to enable residents to make lifestyle changes. In delivering such support Delta Wellbeing interact with businesses offering digital technology solutions. Its focus, however, is to ensure that the care support provided to residents is focused on residents' needs, with the support of technology, rather than being technology-led. In this way Delta Wellbeing is acting as an innovative test bed for partners across the social care system, from the regulators, through to tech companies, testing and trialling products and services, and providing feedback from practitioners and residents.

Future challenges and opportunities

Significant challenges associated with the ongoing response to the COVID pandemic alongside a constrained funding environment and technological change call for innovative responses to the healthcare needs of residents in Carmarthenshire. The current activities and initiatives supporting healthcare innovation (see Section 3) show that public and private partners are actively responding to this agenda. More action, however, will be needed to address the wide ranging nature of these challenges, not least funding for innovation and the need to ensure implementation of existing plans such as Pentre Awel and longer term plans for the new Hywel Dda hospital.

A key opportunity here is one of supporting the capacity to innovate innovation in the health sector. This in part relates to encouraging more staff to engage in innovation activities in organisations such as HDUHB, but also the need for specialist staff that can seek out, support and manage innovative opportunities. This will be particularly important for the new developments taking place at Pentre Awel, the Trittech Institute and so on. Such capacity has the potential to develop and evaluate technologies for patient care, unearth latent innovation opportunities, and improve the delivery of health and social care in Carmarthenshire. It may also offer opportunities to disseminate results elsewhere in Wales and in the wider market.

A further opportunity relates to the development of critical mass. Here there are a growing number of organisations and facilities able to contribute towards healthcare innovation both locally, regionally and nationally. While a number of partnerships have been established within the county and regionally (e.g. UWTSD and HDUHB) it is recognised that greater linkages between healthcare facilities could help to provide opportunities for the development of med tech, including product testing in the community. Key current and planned sites that could potentially contribute towards this agenda include Pentre Awel, Carmarthen Town, Llandovery and Cross Hands. Relatedly, there is a challenge of raising awareness of the innovative activities being developed in Carmarthenshire, as a route to gaining access to potential sources of funding for innovation (HDUHB interview). Here greater working with the Welsh Government's Innovation Specialists provides one such avenue

through which the opportunities for innovation and commercialisation could be further developed.

Procurement is an area where the significant spend of organisations such as HDUHB present opportunities to support innovation, by encouraging local and regional suppliers to establish new practices and business models. Moreover, this offers the potential for procurement to produce both social and economic value in particular places, spreading beyond the boundaries of the health board. In this way the place based nature of health and social care and its ability to link to other policy agendas presents a further opportunity to encourage innovation activity in this space. As illustrated by the plans for Pentre Awel the integration of healthcare, wellbeing and social care, supporting preventative based support for residents in an area of deprivation, show how innovation in this space can contribute towards place-based regeneration. Likewise, there may be opportunities to better connect to the digital skills agenda to ensure that residents are best able to engage with health and social care opportunities (e.g. telehealth). This again, may require collaboration with digital skills providers and initiative such as the Swansea Bay City Deal Skills and Talent initiative as well as organisations such as Business Wales.

These opportunities do not rely on 'new to the market' forms of innovation. Instead, they call for innovation activity that is translated to into practice for to the benefit of residents and health and social care provision in Carmarthenshire. This calls for innovation to be viewed as a form of a social practice in which its activities may take the form of organisational as well as technological changes. They also call for the challenges and opportunities to be responded to in collaboration. That is, the complex nature of these challenges and the constrained funding landscape mean that a team-based approach is needed.

The NHS and local authorities represent key actors with responsibilities for health and social care in Carmarthenshire. The private sector is also active in providing social care, and this is an area where there is potential for the Council to play a role in driving innovation through its commissioning and procurement strategies. Responding to the challenges and opportunities noted above, however, will require joined up action with other important actors not least technology companies in Carmarthenshire and beyond, many of which are active in approaching HDUHB, Pentre Awel and Delta Wellbeing to evaluate their products and services in a health and social care setting.

Welsh Government support for healthcare and innovation through schemes such as its Smart Suite of programmes (including Innovation Specialists), but also through its healthcare division, with its funding support for digital transformation, technology development and adoption and transformation projects. The SBRI programme, focused on addressing innovation challenges is also potentially relevant to health and social care challenges. In the digital skills agenda the private sector may provide opportunities for partnership, with large and smaller businesses active in raising digital skills.

In all these cases the opportunities will require actors to develop strong cases for support and align these towards its objectives of health and social care, but also those of Welsh

Government and other funders. The prize associated with developing greater innovation capability, however, is one that has the potential to support multiple policy goals and objectives in Carmarthenshire.

Foundational economy

The foundational economy constitutes a radically new perspective of place-based development (The Foundational Economy Collective, 2018). In contrast to the traditional conceptions of economic development, all of which have been obsessively focused on a narrow range of high-tech sectors, the foundational economy focuses on those sectors and activities that make a direct contribution to social wellbeing. The foundational economy (FE) refers to the basic requirements of civilised life for all citizens irrespective of their income and location. It includes ‘material infrastructure’ – pipes and cables and utility distribution systems for water, electricity, retail banking, etc. – and ‘providential services’ – education, health, dignified eldercare, food provisioning and income maintenance. Conventional ways of theorising and measuring the economy render the FE invisible and overlook its contribution to development. Orthodox thinking is fixated on the contribution of hi-tech, knowledge-based industries and property-led regeneration to increases in GDP. But, growth in GDP is not translating into improvements in living standards for many households and provides only a narrow index of progress. Understanding the FE is essential to thinking about alternative forms of economic development because it is welfare-critical for those with limited access to private provision, underpins household consumption and is a large employer in sectors like water, energy and elderly care provision (Heslop et al., 2019).

The Welsh Government was the first government to embrace the FE as part of its suite of regional development policies when it launched the Foundational Economy Challenge Fund in 2019 with three aims: (a) to support a series of experimental projects to test how we can best support the foundational economy and which Government interventions work best; (b) to increase the number of grounded firms in Wales and establish a firm base of medium sized Welsh firms which are capable of selling outside Wales but have decision-making rooted firmly in our communities; and (c) to spread and scale good practice by supporting social value within public procurement and by helping Public Service Boards to use and strengthen local supply chains. According to the Welsh Government: ‘this is not a small part of the Welsh economy, with estimates suggesting it is four in ten jobs and £1 in every three that we spend. In some parts of Wales this basic ‘foundational economy’ is the economy’ (Welsh Government, 2019).

Because the FE covers so many sectors and activities, the focus of this deep dive is threefold: agrifood systems, construction and public procurement. Each looms large in discussions of the FE in Wales and Carmarthenshire has been playing a leading role in all of them.

Agrifood systems

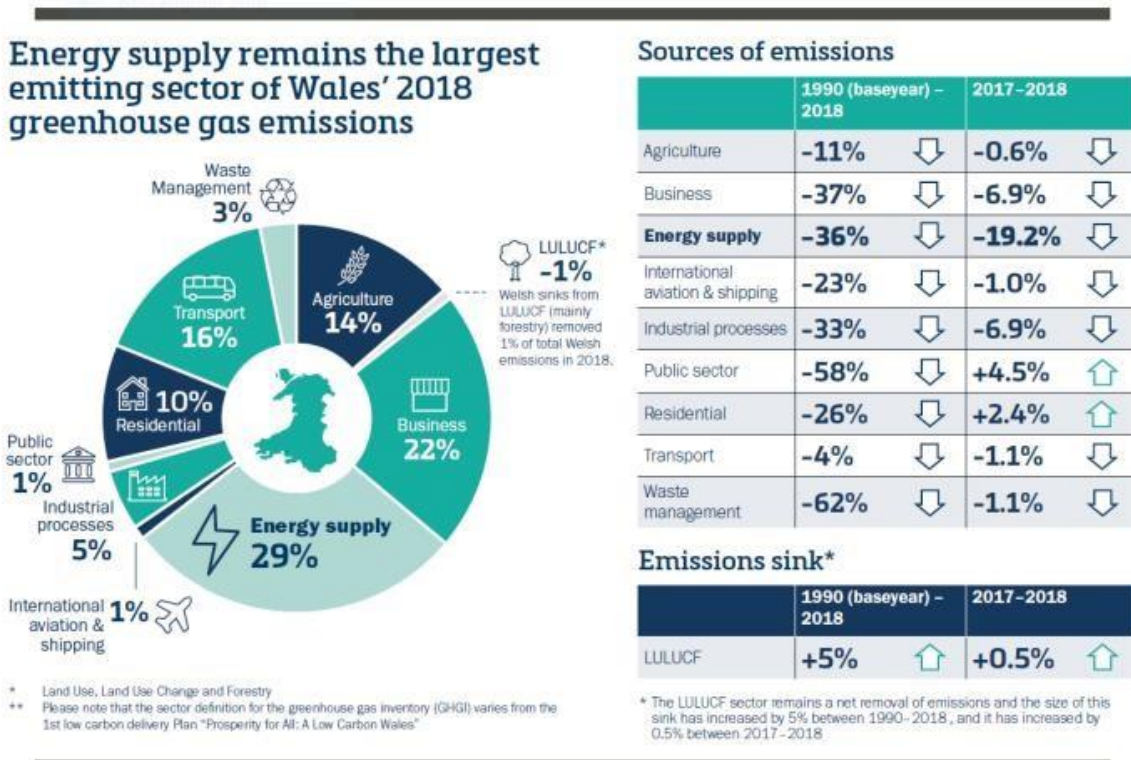
Although agrifood is not a single sector of the economy in the official statistics, straddling as it does agriculture on the one hand and the production, processing and retailing of food on the other, there is a compelling logic for treating it in a holistic way because they are both integrated parts of what we think of as ‘the food system’. Carmarthenshire is on the front line of the challenges facing the agrifood chain because, as we saw in chapter 3, while agriculture, forestry and fishing represents one of the smaller employment sectors, the proportion working in the county is almost double the national average in Wales (see Figure 12). As the

county also has an above average dependence on small firms, it needs to think afresh about how to support such firms if they are to survive the upheavals that are underway in the agrifood chain. To explore these challenges we focus on two key issues: (a) the implications of the Net Zero target for agriculture and land use and (b) the problems and possible solutions facing smaller firms in the agrifood chain.

As we can see from Figure 21, agriculture has been one of the slowest sectors in reducing its carbon emissions in Wales, with emissions falling from the base year (1990) by just 11%, due largely to a decline in livestock numbers and nitrogen fertiliser use. Agriculture will come under particular political pressure over the next decade for 2 reasons: (a) because Wales has a significantly higher proportion of total emissions from agriculture compared to the UK as a whole, 16% in Wales compared 10% in the UK; and (b) because the Welsh Government has declared this to be ‘a decade of action in Wales’ when ‘we need to make more progress in the next ten years than we have in the last thirty’ (Welsh Government, 2021b).

In the balanced net zero pathway, Wales must undertake afforestation at a rate of 4,500 hectares per year by 2025, further increasing this rate to 7,500 hectares per year by 2035. Other measures will include: a significant reduction in meat and dairy consumption and food waste; increasing average crop and livestock yield; conversion of agricultural machinery on a mix of electricity, hydrogen and biofuel; a shift towards more horticulture indoors; restoration of peatlands; and an increased cultivation of energy crops (Climate Change Committee, 2018).

Figure 21 Energy emissions in Wales, 2018



In the most recent Net Zero policy statement the Welsh Government plans to rely on two interventions to reduce emissions in agricultural production and land use patterns. The first

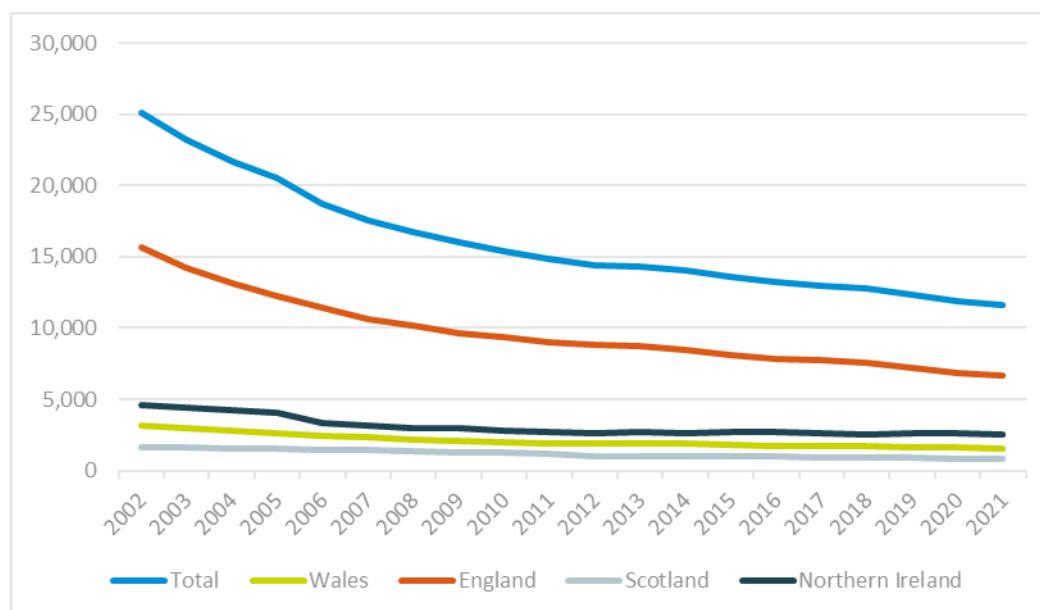
concerns *low carbon farming practices*: here policies will encourage the uptake of low carbon farming practices quickly and at scale to reduce the overall farm carbon footprint. The second concerns *measures to release land*, where changes in consumer and farmer behaviour will be encouraged to create new land use patterns (for afforestation etc as outlined above) whilst maintaining an improved food production sector (Welsh Government, 2021e).

The composition of agricultural output is closely aligned with land use patterns: over 80% of farmland in Wales is used to produce red meat and dairy products. In fact, the narrow specialisation of Welsh agriculture is illustrated in the value of gross output, where some 50% of the value of Welsh agricultural output comes from livestock sales, mainly sheep and cattle, with a further 40 percent of the value coming from the sale of milk and milk related products from dairy herds. Given the exacting Net Zero target in Wales, 'the logical policy implication going forward is that the key public good is decarbonization and that this requires significant reductions in flock and herd size along with changes in land use to deliver corollary benefits (including biodiversity)' (Foundational Economy Research, 2021a: 12). Three key policy recommendations emerged from this analysis:

- **Welsh Government should set targets for continuing reductions in sheep cattle and poultry numbers for every five-year period up to 2050.** Given the methane emissions from cattle the reduction in cattle numbers should be at least 10% every five years from 2025 which would reduce the cattle herd by about 40% by 2050. This delayed start in the mid-2020s would still leave Welsh agriculture well short of its 2050 carbon reduction target and (optimistically) we hope that genomics and other technologies could cover some of this shortfall.
- **Welsh Government targets for flock and herd size reductions should go hand in hand with targets for increased Welsh processing of meat and dairy commodities.** On dairy, for example, the target could be to stabilise Welsh output of liquid milk at around 2/3 of current level; but at the same time setting a target to ensure that all of that liquid milk was processed into higher value-added milk products within Wales. In this case, the economic value of Welsh processed food output should increase as the economic value of Welsh agricultural commodity output decreased.
- **Changes in land use require new kinds of joined up support for farmers to profit from entering new activities.** Practically, this requires the integration of active policies across three domains: (a) mapping soil and climate to identify sites for tree planting and fields suitable for arable so as to avoid environmental damage and commercial disappointment; with (b) agricultural advice services on small plot afforestation and arable/ horticultural conversion because pastoral farmers do not have the skills for new activities; with (c) construction of profitable pathways to market, particularly on arable and horticulture, where farmers need some assurance of a buyer and public purchasing of food can be used strategically (Foundational Economy Research, 2021a: 13).

The above pressures on farming practices and land use patterns will clearly have a disproportionate impact on Carmarthenshire because, in milk production especially, the county hosts the largest concentration of dairy farms in Wales, accounting for some 28% of the Welsh total. A smaller dairy sector was perhaps to be expected, even without the Net Zero pressures, because it is the continuation of a long established trend, in Wales and the wider UK with the number of dairy producers in decline as we can see from **Error! Reference source not found.** below.

Figure 22 Dairy Production Holdings in the UK



Source: Food Standards Agency, DHI, SEERAD, SDCA, DAERA - <https://ahdb.org.uk/dairy/GB-producer-numbers>

Turning to the challenge of small firms in agrifood supply chains, this is another question that looms large for Carmarthenshire. In fact, this challenge resonates in all regions that are highly dependent on small firms and it is worth referring to this international evidence to distil the lessons of how best to support such firms. The Italian experience of supporting small firms is widely regarded as one of the most instructive because local and regional governments have played a prominent role in keeping small firms on an innovative footing. Distilling the Italian experience for an international audience, one classic report concluded by saying: ‘SMEs are often weak economic actors if considered individually, but they can reach high levels of competitiveness if they work in a local environment ensuring complementarities, common activities, collective goods and institutional stability...aimed at increasing the competitiveness of the cluster, promoting networks and cooperation between firms, upgrading technology and human resources, improving quality of products, etc’ (Bianchi et al., 1997).

Although the Italian experience may seem irrelevant to small firm support in Wales today, its emphasis on ‘collective goods’ informs a new foundational economy perspective on SMEs in the Welsh food system that is highly pertinent for Carmarthenshire. One of its key policy prescriptions on the supply-side is the need for a more integrated business support

infrastructure for small firms in the food processing sector, involving a combination of both 'soft' and 'hard' infrastructure (Foundational Economy Research, 2021b)).

The 'soft' infrastructure refers to the development of business support and advice that currently exists in the shape of the three food centres in Wales. But this soft infrastructure is not part of a holistic strategy and there is a very real risk that it can atrophy as it is highly dependent on rapidly disappearing EU grant funding. As the Foundational Economy Research report says: 'The challenge of defending existing provision is most acute with the innovation centres like the Wales Food Centre at Horeb, whose existing grant funding runs out in two years' time. There is no commercial business model which would allow the food innovation centres to provide the same services to SMEs at prices they could afford' (Foundational Economy Research, 2021b: 35).

If Horeb had to rely on private funding then its key asset – its 7 person food technology team – would have to be severely reduced, perhaps to as little as a 2 person technology team. A more commercially driven Horeb would also have to address its services to the larger firms in the region, neglecting the micro and small firms that are most dependent on its offerings. To avoid such a scenario, two things are required as a matter of urgency: (a) there is an urgent need to put these food centres on a more sustainable financial footing, and this will only happen with public funding and (b) equally urgent is the need to integrate the food centres in a business support framework that is part and parcel of a more conscious and holistic food strategy.

But the 'soft' infrastructure needs to be complemented by a 'hard' infrastructure that helps to overcome the problem that afflicts many small firms in rural areas of the north and west of the country, where property prices are so much lower. This is the *cost versus value* problem where the cost of construction of a facility is so much greater than the market value that is subsequently placed on it by banks when they seek collateral for their secured loans. It's an astonishing fact that very few publicly-funded industrial units have been built in Wales since the demise of the WDA, even where there is a strong demand for quality premises. One practical solution to the cost versus value problem is the Cross Hands Food Park, which was entirely funded by CCC to provide rental units for both small and large firms. The Foundational Economy Research report concluded by saying that there is no reason why this model cannot be deployed again because: 'Carmarthenshire Council says it could fill another food park tomorrow, if it had the resources to do so. This prompts the question of why public sector consortia are not building four or five new food parks across the Welsh regions; and relating them to the three existing innovation centres in a hub and spokes arrangement. This would allow co-ordination of the soft and hard infrastructure that support SMEs' (Foundational Economy Research, 2021b: 38).

Another issue that urgently needs attention concerns the roles of Castell Howell in the Welsh food system. Castell Howell (CH) is not just any old firm in the food sector in Wales. On the contrary, it is not too much to say that CH plays a food brokerage role that straddles the soft and hard infrastructure: 'soft' in the sense that CH can advise and mentor its smaller suppliers in dealing with complex and time-consuming public sector food tenders for example; and

'hard' in the sense that its supply chain functions as a conduit through which Welsh produce is procured and distributed in and beyond Wales.

In other words, CH needs to be understood as a strategic part of the Welsh food system rather than just an ordinary firm among many others. If this is the case, then local and national governments in Wales need to address the concerns that have been shared with us about the future trajectory of CH. The most important concerns are twofold: first, that CH may be falling behind its main rivals (Brakes and Bidford) in the introduction of automation and the application of AI in particular; and, second, that the lack of succession planning could result in CH being sold to one of its main competitors. Should it be taken over by one of its rivals, then local Welsh produce would most likely be hollowed out of its supply chain - in the way that is currently happening in Brains following the Marstons takeover.

These concerns need to be addressed as part of a more holistic Welsh food strategy where supply-side and demand-side measures are calibrated to avoid the fragmented, silo-based policies that have stymied Welsh food policy in the past, particularly with respect to public procurement.

Construction

Construction is a key part of the foundational economy on two counts: it is an important source of local employment, especially for the self-employed and for disadvantaged groups in the labour market, and its services include the provision of affordable housing and the retrofitting of the built environment.

The sector is undergoing an unprecedented period of change on multiple fronts. On the *supply-side*, traditional methods of production are being challenged by the advent of Modern Methods of Construction (MMC), including Off-Site Manufacturing and Digitalisation; the sector is mired in a chronic skills and capacity crisis, exacerbated by the combination of Brexit and Covid; and supply chains are fragmented and subject to debilitating boom-and-bust cycles.

Meanwhile on the *demand-side*, there is ever-growing pressure to build more and higher quality affordable housing as well as other private and public sector projects; government policies have encouraged local authorities to re-enter the house-building sector; and public procurement policies are exploring the potential to shift from low-cost to social value tendering. Many of the problems afflicting the sector have their origins in the three root causes highlighted in Figure 23 below.

Figure 23 Challenges facing the construction industry



Source: Farmer (2016)

As it is not possible to address all these challenges here, this section focuses on the three challenges where CCC can make a real difference, namely: (a) the skills pipeline (b) supply chain development and (c) public procurement.

In terms of the construction data presented earlier (in Figures 12 and 13) we can see that there are comparatively fewer construction companies in Carmarthenshire relative to the regional and national averages. On the other hand, the county has an above average level of construction employment (5.9% of total employment in the county relative to the Welsh average of 5.3%), which suggests that construction firms are somewhat larger than those in other parts of Wales. Even so, the vast majority of construction firms are small and the largest firms fall into the SME category. At the beginning of 2021 the county's three largest construction firms - in terms of turnover - were WRW Construction, TRJ and Morganstone. Although they are all classed as SMEs, these firms pursued very different business models, highlighting the commercial diversity that exists within the SME category.

The skills pipeline: The most comprehensive review of the UK construction labour model came to the following conclusion with respect to the skills challenge: "The real ticking 'time bomb' is that of the industry's workforce size and demographic. Based purely on existing workforce age and current levels of new entrant attraction, we could see a 20-25% decline in the available labour force within a decade. This scenario has never been faced by UK construction before and would be a capacity shrinkage that would render the industry

incapable of delivering the levels of GDP historically seen” (Farmer, 2016:8). This ticking time bomb was identified in 2016, that is before the effects of Brexit and Covid were factored into the analysis, which suggests that the construction sector faces not a conventional skills shortage but a *chronic* skills crisis.

Remedying the skills crisis will require a lot more than yet another new training scheme; on the contrary the single most important change that is required is a new social compact between the key stakeholders in the sector as the Farmer Review said: “At the heart of this review’s recommendations...it is proposed that a new, ambitious and mutually beneficial *tripartite covenant* is established between the construction industry, its end clients (private and public) and government acting as a strategic initiator” (Farmer, 2016: 10).

To its great credit Carmarthenshire crafted a strategic response to the skills crisis at a local level that prefigured the kind of ‘tripartite covenant’ that Farmer recommended for the UK. Although we cannot do justice to this local social innovation here, it is worth noting the strategic significance of what has been achieved – initially under the auspices of CCTAL (the Carmarthenshire Construction Training Association Ltd) and then under its successor scheme Cyfle (the shared apprenticeship scheme for the region).

CCTAL was conceived in 2000 when Barry Liles (Coleg Sir Gar) and Robert Williams (WRW) in conjunction with the County Council saw the need for a locally organised training system for small firms in the construction sector. To that end they began to calibrate the activities of the industry, the college and the local authority and Anthony Rees was eventually appointed as the full-time manager. In 2002 CCTAL became the first independent training body in the UK, enabling it to receive direct grants from the Construction Industry Training Board (CITB). With a membership of 20 firms in the county, and in close collaboration with the CITB and Coleg Sir Gar, CCTAL launched the first shared apprenticeship scheme in the UK, an ideal solution for a sector in which small firms predominated. In this scheme CCTAL acted as the legally recognised employer and the original plan was to train twenty-five construction apprentices per annum for the first three years.

The new scheme might have been destroyed by the Great Recession in 2008, but it was actually strengthened by another local innovation that forged a link between two critically important schemes – the CCTAL training scheme and the Carmarthenshire Homes Standard (CHS) scheme, a local version of the Welsh Housing Quality Standard which involved a large public procurement programme to improve the quality of social housing.

By making CCTAL membership a community benefit clause of the CHS scheme, it not only put the shared apprenticeship scheme on a more sustainable financial footing, but it also doubled the corporate membership base of CCTAL between 2006-2011, highlighting the double dividend of using local public procurement policy to boost local training provision. This requirement was soon woven into the requirements for other capital related projects delivered by CCC. It was also applied to Welsh Government funded schemes, such as the Dinefwr trilevel reform of secondary schools in 2009 and all C21 schemes subsequently. The requirement was subsequently included as part of all property capital related major works

projects delivered by the authority. This tri-level approach between the different organisations within Carmarthenshire primarily, along with the need for contractors on the South West Wales regional contractors framework, has been recognised both regionally and nationally through various awards, including a Procurement Go Award in 2016.

CCTAL proved to be so successful that it was scaled up into a regional scheme in 2012, covering four local authorities and three training groups, and in the following year it was rebranded as a charity and relaunched under the name of Cyfle as a shared apprenticeship scheme for the whole of South West Wales. Catering for just two trades at the outset, Cyfle now caters for nine trades. To date it has trained 780 apprentices and it is on course to meet its target of 1000 by 2025. Since 2016, the SWWRCF was expanded and in 2020 now includes the five Local Authorities as primary partners and many other participants within the areas covered by Carmarthenshire, Ceredigion, Neath Port Talbot, Pembrokeshire, Powys and Swansea.

The County Council has also been a key partner with local construction companies in the Next Steps Programme over the last 10 years, which provides work experience in the construction sector and apprenticeship placements.

As an innovative response to the construction skills crisis, the Cyfle scheme is instructive in two respects: (a) because of its collaborative funding model and (b) because of the agile way it has pivoted to reach a younger labour market cohort. The Cyfle funding model is one that is applicable to many other sectoral training systems and to other place-based cluster-building schemes as well. The collaborative funding model consists of the following contributions: 55% of the total budget comes from construction firm members, 30% from the CITB and the remainder from a mix of Welsh Government, local authorities and housing associations, including Carmarthenshire as a significant contributor.

Cyfle has also been forced to engage with a younger cohort than is traditionally the case because of a growing concern among employers about the educational quality of young people applying for apprenticeships. To address the quality problem, it launched the South West Wales Hub in March 2021 in an attempt to improve the level of entry level skills (Level 1), an initiative funded for a limited period through a work experience grant from UKG. In both these cases. The Hub is a pre-apprenticeship scheme that offers 16 year-olds a 13 day work experience programme (with 10 days on site) and pays them £200 for their time. At the end of the scheme the teenagers learn to design a cv and they receive a toolkit with £150 worth of tools.

The key challenge for Cyfle is the sustainability of its funding model. This is also the key challenge for more recent initiatives to meet the construction skills crisis – such as the Construction Wales Innovation Centre (CWIC) and the Construct Net Zero Cymru (CNZC), both of which are hosted by UWTSD. The Cyfle model of collaborative funding would appear to be the only viable funding model for all these ventures, where contributions from all stakeholders need to be aggregated as a common pool resource to fund a more integrated construction skills pipeline along the lines recommended by the Farmer Review. Contributions to the common pool resource should come from public and private sector stakeholders,

including the large multinational construction firms that have been awarded the largest contracts in the region. A test case of this new funding model will be the local and regional asks that are made of Bouygues, the French company that has recently been awarded the prime contracts for Pentre Awel in Llanelli and the Kingsway in Swansea, an issue we address later in the context of public procurement.

Supply chain development: far from being a local problem in Carmarthenshire, the problem of supply chain fragmentation is one of the key features of the UK construction sector and it is both a cause and a consequence of an industry structure with the following profile: • Structural fragmentation is the overriding feature of the industry, with limited vertical or horizontal integration and high levels of self-employment;

- 40% of all construction contracting jobs are classed as self-employed compared to just 15% in the economy as a whole;
- The lack of integration manifests itself in very high levels of sub-contracting and a transactional and adversarial culture that renders it cost-focused rather than value-focused;
- Construction has the highest level of SMEs of any industry, with nearly a fifth of all SMEs working in the construction sector;
- The unwritten rule in construction is that the industry is defined by its flexibility, which among other things means a reluctance ‘to hold a large work force or fixed cost investments’ (Farmer, 2016: 18).

So deeply embedded are these structural features that it is difficult if not impossible to change them at a purely local level. Even so, much can still be achieved through creative place-based collaboration as we saw with the Cyfle shared apprenticeship scheme. Public procurement policy can be a catalyst for change on the demand-side, but complementary changes are also needed on the supply-side by supporting local firms that embody good practice. Given the tighter labour markets following Brexit and Covid, firms that can rely on their in-house skilled trades are likely to be more resilient and more grounded than firms that dependent on loose and unpredictable sub-contracting arrangements. Once a minority concern, labour security has become a mainstream industry-wide concern given the chronic skills shortage throughout the construction sector.

Supporting grounded firms pre-supposes that public bodies have the capacity to perform the necessary due diligence to acquire the granular knowledge that allows them to engage in targeted business support. In short, it is not enough to target “local firms” purely on account of their postcode. CCC and its local partners should emulate the Welsh Government policy of supporting firms on a “something for something” basis to ensure their business models are well founded so that they do not create local versions of Carillion.

As we will see in the following section on the role of public procurement, some local firms in the county feel that they are unable to access construction contracts above the £5m band. They also feel that CCC could do a lot more to promote supply chain development in the sector by calibrating minor and major work programmes so that there are clearer pathways to help small firms to scale up to SMEs and for SMEs to grow.

More targeted support for supply chain development will require a new level of collaboration among local authorities and between local authorities and housing associations because new skill sets are required by Off-Site Manufacturing and digital integration tools like Building Information Modelling. An independent review of affordable housing in Wales recommended more sharing of skills, capacity, and resources to support SME development in house building, a recommendation that is equally applicable to the entire construction sector (Pamment et al, 2019). The reasoning was obvious: there is simply not enough local supply chain capacity in Wales for local authorities and housing associations to operate in silos when they design their procurement policies.

Public procurement in construction: the power of purchase can play a truly catalytic role if it is deployed in a strategic fashion and if it is synchronised with other business support policies. When it is clearly communicated to potential suppliers, the forward work plan for procurement can give confidence to suppliers as it helps them to plan longer term. This is especially important in the construction sector where firms are subject to boom-to-bust cycles and where forward work plans can provide the assurance they need to invest in training and capacity.

After adult social care, construction is the largest item in CCC's procurement budget, accounting for 20% of the total and amounting to nearly £50m in 2020-21, and the council is now seriously committed to securing more social and economic value from its power of purchase. The scale of public works in the county and the region in recent years has created an unprecedented opportunity for generating a double dividend: by honing CCC's procurement expertise on the one hand and by promoting a more innovative and sustainable construction supply chain on the other. Projects like the 20th Century Schools programme (Renamed Sustainable Communities for Learning from 01/01/2022), the Carmarthenshire Homes Standard and large-scale projects like Pentre Awel should be expected to leave an enduring developmental legacy in the county in terms of better schools, healthier homes and a platform for local construction firms to acquire the skills sets to exploit the burgeoning commercial opportunities associated with MMC, Net Zero and Retrofitting etc.

A case in point is the South West Wales Regional Contractors Framework, which amounts to more than £1 billion over a four year period from 2020-2024. With the exception of Lloyd & Gravell Ltd and WRW, the county's local SMEs were not successful in the procurement process for the largest project bands (£5m+). Although they are not included in the larger financial frameworks, they ought to be able benefit by being included in the supply chains of the companies that secure the primary contracts for these major public works. The County Council encourages the successful contractor to engage with local suppliers and contractors to afford them opportunities, although current procurement rules stipulate that the client cannot direct them to use local businesses.

Local SMEs in construction seem to be unaware of some of the proposed changes underway in the council's procurement policy, changes that clearly need to be better communicated to the sector in the county. Among other things for example, CCC is considering moving to a new

weighting system for the price/quality ratio; it is considering exploring new payment methods based on results rather than hours on site etc; it has created a new procurement post for a dedicated community benefits officer; it is putting more effort into publicising its forward work plan for purchasing to support discussions with WG's Construction Forum; and it is striving to utilise its major and minor works programme in a more strategic fashion.

There are opportunities for the County Council to make significant improvements in the field of procurement and contract / supplier management to support the local economy, but this will require additional resources to realise the benefits. Key performance indicators, linked to local economic benefits, may also be a way of demonstrating the envisaged benefits.

CCC's new procurement policy will be tried and tested in the Pentre Awel project in Llanelli: at £70m it is the largest single project in the county's history. As we noted earlier, the primary contract was awarded to Bouygues, a French multinational. Apart from ensuring that the project is delivered on time and to budget, the challenge for CCC will be to ensure that there is an enduring local legacy in terms of skill sets, supply chains and community benefits. None of these things is assured because Bouygues has its own ready-made supply chain and it is also well versed in offering clients a standard diet of targeted recruitment and training and other community benefits that tick the social value box.

But in awarding the primary contract to Bouygues, CCC signalled its ambition for the project and demonstrated its capacity for innovation by breaking with conventional procurement practice by giving more weight to quality relative to price in the scoring criteria. While a 40% price/60% quality split deviated from CCC's traditional procurement practice (which is 70%/30% in favour of price), it was nevertheless aligned with project goals to deliver social value and maximise local socio-economic impact. During the assessment of tenders, this new weighting system ensured that community benefits, far from being a tokenistic consideration, were deemed to be central to the goal of securing an enduring socio-economic legacy from the Pentre Awel project.

Public procurement

Public procurement garners more attention than any other foundational policy because it is deemed to have the greatest potential for effecting economic, social and environmental change. This is because Wales spends over £6 billion per annum on goods, services and works and it is widely believed on all sides of the political spectrum that public procurement - the power of purchase - ought to be deployed in a more consequential manner than it has been to date. The need for more innovative public procurement policies is now widely recognised, at both national and local levels in Wales, and this section aims to explore the potential of deploying the power of purchase in more creative ways. Public food provisioning is used to illustrate the scope for creative public procurement because it is the sector that Carmarthenshire has chosen to explore the contribution of the foundational economy in the county. Tapping the potential of public procurement, however, is easier said than done.

It is more than twenty years since the Welsh Government published *Better Value Wales*, the first systematic review of procurement in the Welsh public sector. Although it was a

pathbreaking review of purchasing practice in 95 public bodies, it was marred by the fact that it was framed almost exclusively in terms of a *cost-saving* rather than a *value-creating* exercise. Among other things, the review assumed that major savings could be secured if the public sector consistently achieved prices in ‘the lower quartile’ of their price spreads. Twenty years on, the Welsh Government is committed to framing public procurement guidance in terms of the Well-being of Future Generations Act, an approach that extols “values for money” not merely value for money in the narrow sense of the term (Morgan, 2012; Morgan & Morley, 2002).

But there is continuity as well as contrast between then and now because the public procurement landscape in Wales today remains very uneven. While there are recognised pockets of good practice, in general terms the procurement service is not fit for purpose and good practice remains a bad traveller. The main problems have a familiar ring: the procurement process is perceived as too complicated, especially for SMEs; the status of procurement tends to be seen as a back-office function, subordinate to the finance function, when it needs to be elevated into a higher level board room function; procurement skill sets are woefully inadequate and recruitment and retention have been rendered more challenging by the pandemic; and the procurement profession faces an ever-expanding set of policy priorities in the face of diminishing resources and budgets.

In short, the good intentions of policymakers and public sector managers need to be translated into good practice on the ground across the public sector in Wales. This is nowhere more important than in public sector *food procurement*, where new guidance from the Welsh Government needs to inspire and enable the procurement profession to secure the “values for money” ethos that informs the Well-being of Future Generations Act.

Food can deliver multiple benefits because: (a) it is a key part of the foundational economy (b) it is vital to health and wellbeing and (c) it can play a major role in helping the Welsh Government to realise its net zero ambitions. There is an urgent need for new policy guidance for public sector food procurement for the reasons set out in the Foundational Economy Research report on how to increase grounded SMEs in food processing and distribution (Foundational Economy Research, 2021b).

Commissioned by the Welsh Government, the Foundational Economy Research report assessed the scope for, as well as the barriers to, public sector food procurement in Wales and two of its insights need to be incorporated into new guidance as a matter of urgency:

- Welsh public sector spend on food and catering amounts to just £94.4m per annum, roughly equal to the (non-fuel) turnover of a single Tesco hyper market. This total is divided into many product categories, which means that even the largest categories (like meat and dairy) account for no more than £10-£15m per annum, which is too modest to transform the fortunes of Welsh SMEs;
- Because public procurement expenditure is too small to directly support SMEs at scale, Wales needs to use procurement in a more innovative and

integrated way as one element in a larger suite of policies for growing value and volume, in addition to meeting socio-cultural objectives like the quality of food on the public plate (Foundational Economy Research, 2021b).

The Foundational Economy Research report recommended a major change in the way that public contracts are viewed and valued so that they shift the *price/quality weightings* in Welsh public sector food contracts away from quality weightings as low as 20% in some current contracts and towards a 50% quality weighting in new contracts, where quality would be understood primarily as local provenance. Local food sourcing needs to have a clearer and more robust rationale that distinguishes between two goals that have been confused in the past because they have been uncritically bundled together.

New food procurement guidance needs to help policy makers and public sector managers to appreciate the difference between goals which have a *socio-cultural* impact and those which have *volume economic* reach: for example, policies for quality school meals vs policies for increasing supermarket stocking of Welsh product lines. Both are valid in their different ways, but we should not confuse them and suppose that the one necessarily delivers the other.

New guidance would also need to draw on recent thinking around Social Value, Community Benefits and TOMs (Themes, Outcomes and Measures) that has been developed by local authorities and health boards working with the Social Value Portal for example. This new thinking is being used in Wales to help to measure and give practical effect to the seven goals of the Well-being of Future Generations Act (Welsh Government, 2015) and the ten principles of the latest Wales Procurement Policy Statement (Welsh Government, 2021d).

CCC has long been considered one of the exemplars of good procurement practice in Wales, especially with respect to school food provisioning, where the catering service was led by Elin Cullen, an award-winning council official who was widely perceived to be a leading light in the sector (Morgan & Sonnino, 2008). More recently Carmarthenshire has been one of the most successful local authorities in Wales in bidding to the Foundational Economy Challenge Fund (FECF), which has supported two foundational food projects to date:

- *Carmarthenshire Public Sector Food Procurement*: the first FECF project involved all the Public Services Board (PSB) partners and it sought to tap the potential of the £5 million that they collectively spent on food to secure the economic, health and environmental dividends of 'smart public food procurement'. While a significant amount of this is already spent with local suppliers, the PSB noted that 'it may not necessarily be locally produced' (CCC, 2019).
- *Cook-Freeze Project*: the second FECF project sought to extend the work of the above project by exploring the commercial viability of a delivery model to bridge the gap between demand and supply. The rationale for the proposal said: 'In order to give the local food supply chain the confidence to invest in and develop the delivery model, there needs to be a demand for that provision. Hywel Dda University Health Board, working with the local authorities within its areas, are looking at ways to develop the way they

prepare and provide their meals for in-patients at their facilities. A cook/freeze delivery model, using locally sourced produce which fulfils both nutrition standards and patient experience, is being considered' (Hywel Dda Uhb, 2021b).

Although these foundational food projects are eminently sound and sensible pilot exercises, they remain modest when set against the barriers on the demand-side and the supply-side. On the *demand-side* there are two main problems. First, the scale of the combined procurement budget needs to be aggregated across more public bodies in the local authority and public health sectors where there has been little or no shared procurement up to now. Second, it is unclear what scope exists for local action within the national agreements of the NHS Wales Shared Services Partnership because, as the CLES analysis put it: 'The UHB's procurement approach is governed by these national arrangements, with no local bespoke, local procurement strategy in place— hence, there is currently no specific policy in place in relation to food procurement in terms of the potential to maximise wider socio-economic impact through food procurement activity' (CLES, 2021: 12)

On the *supply-side* there are even bigger barriers, as the CLES analysis found, namely: the fragmented nature of small-scale growers and food producers; complications and risks for large public procurers when dealing with multiple small businesses; seasonality; and the cost and time commitment associated with necessary quality and safety assurance processes (CLES, 2021: 20). A recent audit of the supply-side found that over 94% of the gross food spend of the Carmarthenshire PSB is leaving Wales through purchasing imported produce and ingredients, with the result that 'public sector demand and local supply are almost completely out of tune' (Wright & Cook, 2021).

Along with Hywel Dda UHB, the county council is the other key actor in the Carmarthenshire PSB and therefore the prospects for more creative public procurement will largely revolve around organisational innovation within these two public bodies. The county council is in the process of introducing significant reforms to its procurement practice, not least a new weighting system to give a higher priority to quality vis-à-vis price, a dedicated procurement officer to cover Community Benefits and the inclusion of local suppliers on its shortlists of suppliers. But local innovations need to be framed in and synchronised with wider reforms in the region and the nation. This is especially the case with the new public procurement landscape in Wales, where Caerphilly County Borough Council has been asked to manage the former NPS food frameworks and one of these covers the 16 local authority areas of south and west Wales as we can see from Figure 24 below.

Figure 24 WLGA Food Group



Source: Caerphilly County Borough Council

While localism can be a source of strength, it can also be a fatal weakness if it compromises the commercial viability of potentially transformative food policy initiatives like the CookFreeze project in Carmarthenshire. There is a genuine commercial opportunity here to design a new delivery model to bridge the yawning gap between demand and supply in the public food provisioning sector in Wales and we address this opportunity in the final chapter.

Circular Economy

Introduction

The *Circular Economy* is widely thought of as a recent, and increasingly influential, attempt to conceptualize the integration of economic activity and environmental wellbeing in a sustainable way. In fact, this set of ideas has been traced back to China as the basis of their economic development and was included in both the 11th and the 12th 'Five Year Plan' (Murray et al., 2017). There are a variety of approaches that may be grouped under the umbrella term, Circular Economy. Most place an emphasis on the redesign of processes and (re-)cycling of materials. These are intended to contribute to more sustainable business models but too frequently there is an absence of the social dimension necessary for understanding and delivering sustainable development at a system level (Aarikka-Stenroos et al., 2021). Our interest here is in presenting an inclusive conception of the Circular Economy as an idea and, crucially, in exploring its potential as a key element in a regional innovation ecosystem. For these reasons, we follow Murray et al's definition of the Circular Economy as "an economic model wherein planning, resourcing, procurement, production and reprocessing are designed and managed, as both process and output, to maximize ecosystem functioning and human well-being" (2017: 369).

Circular Economy approaches are a key element of a net zero agenda but have many elements (from re-fit, repair, re-making through sustainable design and manufacture to considerations of natural resources and land use). CE can also be used to engage citizens and raise awareness of climate change and the decarbonisation agenda. In this deep dive we focus in particular on two examples that provide insights into the key considerations in developing such approaches and consider how these initiatives could be grown to deliver benefits that embrace both commercial and environmental outcomes:

1. **Project Slurry** (Prosiectslyri) which has been delivered through a very impressive network of partners and could potentially see greater local economic benefit begin to accrue in the local area;
2. The possibility of an **Eco-park** which could be developed at the Nantycaws site where Cwm Environmental has earned itself a good reputation in dealing with recycling and waste management.

Current Position

Prosiectslyri

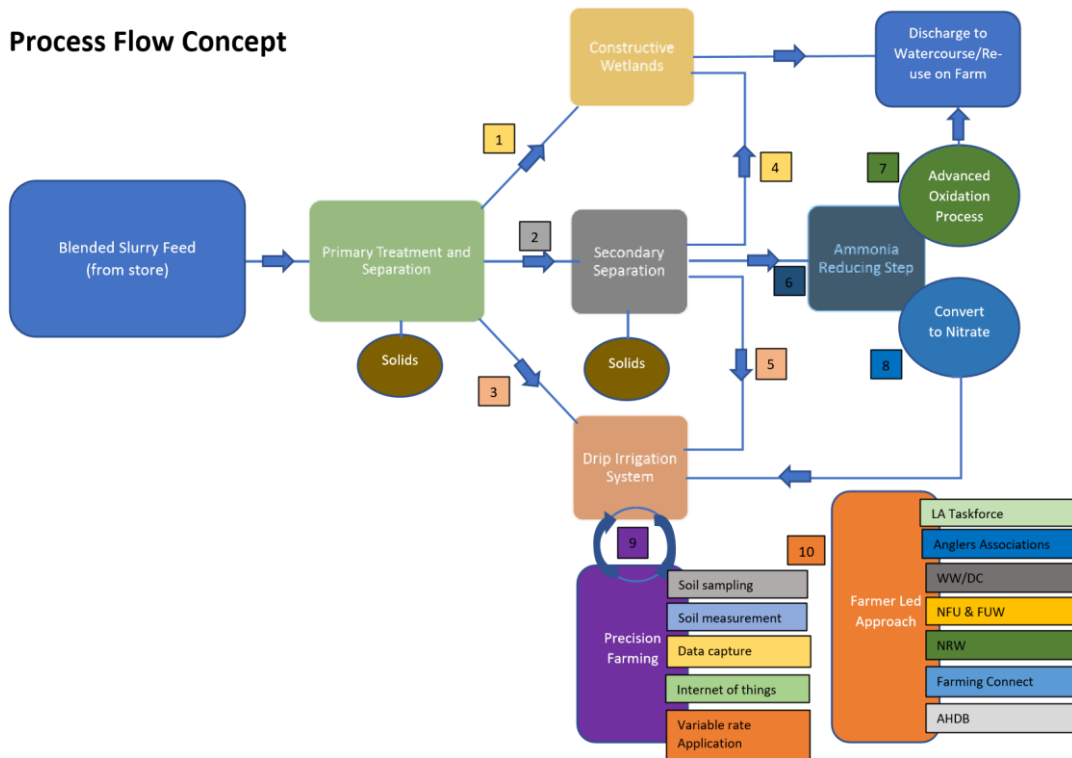
The potential of the circular economy as a focus for collaboration and innovation is very well demonstrated by the Slurry Project and its subsequent development through Welsh Government, SMART Expertise and EU funding. The original project was created and delivered by Coleg Sir Gâr's Gelli Aur agricultural campus and Power & Water, a Swansea based company specialising in electrochemical-based water treatments. This project achieved impressive results in slurry management, removing contaminating elements before discharging the 'cleaned' liquid into the local watercourse. Novel technology developed in partnership lay at the heart of the initial project which has been in the vanguard of such developments and attracted considerable interest. From the outset, the intention of the

project was to design, develop and validate economically viable systems that would be made available commercially and used on farms. Throughout the work has benefited from engaging with the farming community and utilising farm facilities at-scale.

The next phase of the project has seen the challenge broadened and the network of partners has expanded to meet the increased technological and knowledge needs. The range of processes is captured in the accompanying diagram. Power and Water have remained as a key partner and been joined by, amongst others, GEA, Netafilm, Aquatreat and Honesty Foods who are working with the other partner organizations to develop a modular treatment system that can be tailored to end-user needs.

The facilities and expertise of the Coleg Sir Gâr Agriculture Research Centre have been crucial in supporting individual partners, providing an ideal testbed for developing and applying their respective technologies. The further benefit of the centre is in bringing these companies together and providing the facility for them to work alongside each other for both individual and mutual benefit and in seeking integrated modular solutions.

Process Flow Concept



It is worth noting that this ‘local ecosystem’ has emerged organically as the success of the initial project both created further opportunities and attracted interest from outside organizations. The contribution of both the SMART team and senior members of CSG was acknowledged as a key element in developing the further activity. The current programme is developing activities across a group of commercial partners, producing commercial benefits as well as delivering environmental returns. A key next step would be to explore the possibilities of engaging more local firms and looking to see how commercial benefits might accrue to the local economy. Current activity has a collaborative agreement with regard to intellectual property but not commercial rewards. As the approach is picked up by local

farms it is also anticipated that there will be increased demand for the skills and support services needed to deliver it.

Nantycaws

Our second example is also an existing Circular Economy activity with equally pragmatic purposes: the recycling site at Nantycaws. We feature this as our second example since there appears to be an emerging set of ideas for which further opportunities are being scoped. These build from the progress that Cwm Environmental has already made in growing and extending their activities from landfill to waste treatment and materials recovery, the results of which are now being disposed of on the market.

The future plans are ambitious and potentially include renewable energy, including solar and/or wind energy to power the site, a major energy from waste facility, and a new site for commercial circular economy businesses. The possibility of establishing facilities for charging electric vehicles, powered by renewable energy sources (possibly even a hydrogen facility), was also raised. This would appear to be a potentially significant contribution to the local authority's increasingly urgent decarb agenda. Along with these larger industrial plans, smaller-scale and household operations were discussed, including paint recycling facilities to make recycled paint available for community uses, and a carpentry service. These are good ways of engaging local citizens and possibility of establishing further community links and facilities that are valued by the public – such as a version of the remaker space that is being created in the *sparc | spark* building at Cardiff University – are also worthy of serious consideration.

The opportunity here is to develop a centre of excellence and specialist facilities in support of the Circular Economy. Road access, change in land use regulations (for solar energy) and grid capacity were mentioned as possible constraints but the ambition seems deliverable with the right partners and support. People we spoke to were keen to see this pursued through some form of public-private partnership – or perhaps even through a public sector solution.

Future Challenges and Opportunities

The Slurry Project is a live example of the potential that collaboration can deliver around CE objectives. As one of our respondents put it, Prosiectlyri demonstrates 'the power of collaboration and how bringing in partners adds to the capability matrix necessary to solve complex problems and the process of an effective collaboration to make it all work'. It is important to recognise the key roles played by individuals who have brought leadership, expertise and imagination to the project and also the funding that has underpinned the development of both capacity and capability. The development has thus been organic but benefited from a process whereby the partners have jointly scoped and developed their own projects while embracing a shared CE outcome, thereby producing a commitment to the initiative and a sense of shared enterprise. The network of organizations is 'working together sharing effort, knowledge, risks and rewards'. This is a prime example for the county to consider in mobilising its innovation efforts. And it may be that there is more that can be leveraged from the activities underway in the form of local economic benefits.

There is an important skills component when considering the potential of the Circular Economy. As the Welsh Government's *Beyond Recycling* strategy document (2021a) makes clear, investment in green skills such as eco-design, re-use, repair, remanufacture and reprocessing will be needed to support the development of Wales' workforce. There are opportunities here to work with accrediting bodies and training providers, especially local colleges. The CE is also a potentially important focus for apprenticeships which can help bring individual firms into networks of CE activity.

As regards green skills, one of the most important priorities is to align local plans with the Welsh and UK policy commitments to Net Zero. Among the most promising developments in the county and the region is the Construction Wales Innovation Centre (CWIC) in which UWTSD plans to locate its new Net Zero skills centre. This aims to provide a comprehensive Net Zero knowledge ecosystem, with skills training and a supply chain development programme which is not geographically constrained as it has mobile facilities that can be accessed by small firms throughout the county. As a comprehensive green skills training system, it can also cater for both new build and retrofit schemes in the built environment based on circular economy principles. CWIC and the NZ centre would seem to be well attuned to new trends in the construction industry, especially the shift to modern methods of construction and the growing preference for Welsh timber products.

There are also smaller-scale activities that will help to broaden and deepen understanding of the Circular Economy. Carmarthenshire is already home to establishments that are part of Repair Café Wales, a movement of more than 1,800 cafes globally. This is remarkable given it was founded in 2017. The primary purpose of the cafes is to address the unsustainable waste-to-landfill of items whose lifetime could be extended with repair. But Repair Cafes contribute to more than waste reduction, in particular the social dimensions of skill sharing, and community cohesion. There are now around 30 cafes located across Wales (Welsh Government, 2021a).

As the council considers the opportunities and priorities that are offered by activity in the Circular Economy, there are some conceptual frameworks that may prove useful. It is important, in our view, that the approach takes an ecosystem perspective and identifies the various environmental, commercial and social benefits and implications. As Aarikka-Stenroos et al (2021: 260) have recently observed, 'the notion of the "ecosystem" has become important in understanding how linear models can be transformed into circular ones, representing resource efficiencies and material flows typified by feedback loops and interdependencies among different actors'. Such an approach 'allows a consideration of complex constellations of actors, technologies, and institutions that are bound together via loosely coupled interdependencies and co-evolutionary patterns' (Aarikka-Stenroos et al., 2021: 260). As this suggests, such matters are complex and multi-faceted. The authors suggest that an important aspect of any CE ecosystem is its sustainable ecosystem outcome which can be defined by circular processes of recycling, reuse, and/or reduction. They use this and a series of other variables to distinguish between types of CE ecosystem, for example differentiating between those that are intended to lead to new venture creation.

At the level of the ecosystem, previous research has identified three open innovation approaches and the authors (Bocken & Ritala, 2021) distinguish between those concerned with narrowing, slowing and closing the loops in a circular economy:

1. Narrowing focuses on efficiencies and seeks to reduce waste in design and production (this is also common in the linear economy)
2. Slowing seeks to extend the product life and thereby lower the environmental footprint and resource burden
3. Closing focuses on reusing resources (recycling)

Consideration of these points begins to signpost both the opportunities in terms of existing actors and resources in the county and where there may be the need for further extension of networks. For example, what are the possibilities and local capacity with regard to digital platforms in supporting and promoting Circular Economy activity?

5. Conclusions: Opportunities for innovation

The local innovation opportunities that we discuss below pre-suppose that CCC and its partners have the capacity, the resources and the commitment to do justice to the ambitious economic development strategies that they have set themselves. In the case of CCC this concerns initiatives such as the Economic Recovery and Delivery Plan, the Community Wealth Building experiments in progressive public procurement and the Swansea Bay City Deal projects, particularly the exciting but challenging Pentre Awel project. To tap the potential of these opportunities the local authority will need to be internally agile, with respect to its own working practices, and externally engaged with its partners at different levels of the multilevel policy landscape in the SBCD region, in Wales and indeed in Whitehall.

Like charity, innovation begins at home and CCC has lost no time in trying to improve its own working practices in response to the pandemic. The Authority's decision to spend nearly £2m in agile working initiatives, including providing staff with the right equipment to allow them to work in a more flexible way, has helped support an almost seamless move to homeworking. This enabled the council to help over 4,000 businesses to receive Welsh Government's business rates grant payments of between £10,000 and £25,000 with a total amount of over £46 million. As regards service delivery the council made over 40 transactional council services available to the public online, many of which were developed extremely quickly. The challenge now is to embed the organisational innovations that have been triggered by the pandemic and to this end the Transformation, Innovation and Change (TIC) team has been charged with evaluating the Council's response to the COVID-19 crisis to ensure that any learning and positive changes are used to re-design services and the Council's future strategic and operational delivery framework.

But there's no room for complacency because, according to the National Survey for Wales, there are still areas where CCC falls well below the Welsh average, especially in affording people the opportunity to participate in making decisions for example (CCC, 2021c – Annual Report for 2020/2021).

On the economic development front, CCC will need to engage with its local economy in new and more effective ways. As the Economic Recovery Plan makes clear, the county council and its partners in Business Wales etc will need a much better understanding of the needs and nuances of the targeted sectors and this means 'establishing regular communications with representative groups of these sectors through existing partnerships and forums' (CCC, 2021: 27). As over 90% of the county's businesses are micro-businesses (<10 employees), engaging with such firms is no easy task because they have little or no time to engage with the policy world.

Research and experience suggest that firms learn best from other firms; so much so that the first line of a business support strategy is not government grants etc, but peer-to-peer learning within the business sector. What this means is that the real problem in small firm-based regions is not so much being small as being *lonely* - that is not being part of a cluster or a network that can offer mentoring and support (Morgan & Nauwelaers, 1999).

Building the necessary intelligence on the local economy is beyond the capacity of the county council and indeed of any single organisation in the region. Pressures on CCC capacity will become even more acute when EU funding ends in 2023 because EU funds currently support many functions within the council, including some 65% of the officers in the Regeneration Service for example.

The way forward, as we stressed earlier, is to make a virtue of necessity by spreading the business intelligence tasks among the members of the regional innovation ecosystem in south west Wales. Among other things this will require much more concerted action from the three main public sector partners - CCC, Hywel Dda and UWTSD - who also happen to be three of the largest employers in Carmarthenshire. Although inter-organisational links between these three actors have improved greatly in recent years, the fact that we encountered many examples of silo-based working suggests that a mature regional innovation ecosystem is not yet the default position in the region.

But this will need to be remedied as a matter of urgency because the new innovation funding schemes that are in the UK policy pipeline – like new iterations of the Strength in Places Fund and the Catapult Network for example – will require evidence of strong partnership working in place-based coalitions. To access these new innovation funding schemes, compelling placebased narratives will be necessary to broadcast the advantages and achievements of the area and we now turn to the question of spatial narratives.

Innovation narratives

In concluding this report we consider the importance of *innovation narrative* – an aspect of innovation strategy that is seldom considered in regional innovation policy. Interest in placebased innovation narratives has been increasing recently in recognition of their power to effect change and influence future developments. Recent examples of policy reports that have advocated the development of a place-based innovation narrative include the Welsh Government's Brown Review (2019) and our own report on innovation policy in Wales (Delbridge et al., 2021). Effective narratives are based in reality and speak to the 'identity' of a particular place.

Narrative is closely related to issues of both 'place-making' and 'place-branding'. While notions of branding started with rather facile tourism marketing, 'More recently, placebranding has been charged with more ambitious pursuits, including helping to support and cultivate regional socio-economic benefits and even the fostering of sustainable development' (Reynolds, 2021: 15). This has led to the suggestion that the overlapping of place-branding and its counterpart of place-making, perhaps along the lines indicated in the Brown Review, can provide an opportunity for people to come together to develop practices and policies that may produce real and substantive change to their localities. This moves activity beyond marketing gimmicks linked to logos, slogans, poised imagery that are crafted to gain the attention of a predefined audience. Instead, place branding should be considered

as a complex and holistic process that draws on the place itself as well as people's associations to bring about change.

The point that reputation or image of a place can be enhanced by a positive and compelling narrative is particularly important for rural and relatively isolated regions in overcoming any limitations of peripherality because the evidence is that connectivity beyond the region can be a key resource in innovation. Research on innovation in Norway, for example, suggests that the formation of regional hubs with strong connections to international innovative networks can help to overcome peripherality in order to innovate. The evidence shows that companies with a wide range of international partners involved in their innovation processes were significantly more likely to develop new products and generate radical innovations. In other words, regional hubs in the periphery with strong connections to international collaborative networks can successfully produce innovation and economic development (Fitjar & Rodríguez-Pose, 2011).

In our view there is an opportunity to develop a specific Carmarthenshire innovation narrative that is grounded in the distinctiveness of the county, reflects its comparative strengths and captures a suitable level of ambition for the future. Such a narrative will draw on key attributes, including the outstanding environment, healthy lifestyles and a supportive infrastructure for innovation and development (one which seeks to overcome bureaucracy and cynicism), and draws on existing examples and role models to communicate what is possible.

Innovation opportunities

The purpose of this study has been to review the current position of Carmarthenshire and to inform CCC's local innovation strategy in the coming years. We conclude the report with the following opportunities that have been derived from consultations with stakeholders and documentary analysis.

Opportunity 1 - Digital

Enhancing Digital connectivity and exploiting Digital opportunities across Carmarthenshire

Overview

Improving and enhancing digital connectivity is an important priority for Carmarthenshire. While fixed and mobile digital connectivity has improved substantially in recent years the county continues to face challenges to ensure that it does not fall behind other parts of Wales, and that its businesses and communities are able to gain social and economic prosperity through the use of Digital. Four opportunity areas are highlighted:

- i. **Fibre and mobile connectivity:** This opportunity represents a long-term challenge for Carmarthenshire. It will require the county to work closely with the current SBCR and the UKG Gigabit and Shared Rural Network programmes, but also successive deployments of infrastructure and connectivity. Here the county has a range of policy levers that it is able to use to assist deployment including regeneration, planning, legal and highways to ensure that 'barriers' are removed, and deployment secured and facilitated. The challenges faced by rural areas such as Carmarthenshire, however, will require significant ongoing leadership, coordination and action beyond the life of the current funding programmes.
- ii. **Next Generation Digital Technologies:** This opportunity is one of developing the county as a test bed for novel and emerging future technologies such as IoT and 5G use cases, trials and test beds. Here there are a number of planned strategic sites such as Pentre Awel and Yr Egin, and projects such as the Towy Valley path that might be able to act as test beds for social and digital innovation. In addition, Gelli Aur farm and agricultural college represents a current opportunity that the Council may be able to pursue, building on the work of the Agricultural Research Centre, and the potential for an Agri Tech test bed to address agricultural challenges through improved connectivity infrastructure, data and applications.
- iii. **Digital skills:** In parallel to the challenges of deploying connectivity there is the associated opportunity of stimulating demand, raising awareness, and encouraging exploitation of these digital technologies. These are areas where programmes such Swansea Bay City Deal Skills and Talent programme, Business Wales and other private actors could be brought to bear to address digital skills with the local knowledge and support of the Council.
- iv. **A rural digital innovation centre:** A number of innovation centres are planned or in operation across Wales, including M-Sparc in North Wales, the Swansea Innovation Matrix, and Cardiff's Spark development. Such centres respond to their local contexts and support business and others to innovate in association with universities and address place-based economic, social and environmental challenges. Carmarthenshire has the opportunity to develop a similar centre focused on digital innovation and connectivity for a rural area,

Exploring the innovation prospects for Carmarthenshire building on the expertise of partners such as UWTSO and other within and beyond the County, and to apply innovation to locally derived challenges, problems and solutions.

Outcomes

Research shows that businesses that adopt digital technologies tend to achieve greater economic outcomes. It also has the potential to produce social benefits (as highlighted by the pandemic), as well as contribute towards wider agendas such as public service delivery and net zero. In this respect digital represents a cross-cutting theme that has the potential to support other opportunities in this strategy.

Actors

The UKG is an important source of funding digital connectivity in Carmarthenshire and the wider City Region. This includes funding for Gigabit and 5G developments, and will be an important partner for the region. This will require the county to develop its plans in support of funding bids. Welsh Government continues to be an important partner to support this agenda, as does the private sector, with potential to draw on expertise to exploit the IoT network and 5G test-beds.

Timing

2022-2025

Opportunity 2 – Health

Development of a dispersed living laboratory

Overview

Many plans are underway to promote health innovation initiatives across the County. This includes developments taking place at Pentre Awel as well as the proposals for the Hwb in Carmarthen, plus sites at Llandovery and Cross Hands. The opportunity here is one of working to knit these elements together into a functioning innovation ecosystem and exploiting opportunities for a dispersed living laboratory in the HDUHB region. Such labs represent a user-centred, iterative, open approach to innovation in a particular place. While most typically linked to urban areas, the dispersed centres could work alongside innovators to develop and test new medical and non-medical products and services that have health and wellbeing benefits.

The opportunity is one of increasing the scale and scope of such innovation activity in the County. Here the facilities and the co-location of partners at Pentre Awel provide a unique opportunity for it to act as a hub for the dispersed living lab, with a focus on building synergies across the County (and within its tenant base), developing critical mass for trials and product development in the area of health and medtech innovations.

This opportunity will be further enhanced by the development of a strategic partnership with Cardiff University. The Cardiff University team will engage with the wider healthcare and innovation sector to ensure that Pentre Awel and the wider living lab can be explored and proof of concept opportunities maximised. This partnership will provide direct access for Pentre Awel to Cardiff University's Accelerate Network and wider innovation expertise. Such

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developments will help to ensure that the County becomes identified as a location of health and medtech business as well as a beacon of social innovation in health and wellbeing.

Outcomes

The outcomes from a living lab are not necessarily leading-edge novel solutions, but rather the adaptation of technologies and solutions that enhance health and wellbeing outcomes. By developing a distributed network there is an opportunity to amplify these outcomes for the residential population of Carmarthenshire, through testing out a range of medtech solutions in the community. These solutions have the potential to improve health and wellbeing outcomes for the county, as well as produce economic benefits for businesses that engage in such initiatives. It may also help to limit duplicated innovation activity across the Centres. A distributed lab, using appropriate technologies, can overcome the lack of critical mass in a rural region by aggregating scattered locations digitally.

Actors

The living lab concept is based on interaction and learning amongst a broad range of stakeholders, including users. In addition to including local partners such as the council, HDUHB and UWTSD, this has the potential to build on the relationships that have developed through the Pentre Awel with the wider Welsh life sciences network, including the Life Sciences Hub Wales and Cardiff University.

Timing

2022-2023

Opportunity 3 – Foundational Economy

Sustainable food procurement

Overview

Carmarthenshire's PSB has been a leader in aligning its local well-being plans with the major policy drivers in Wales, particularly the Foundational Economy (FE). Sustainable food procurement has been the chosen theme to explore the potential of the FE in the county because it integrates the twin priorities of progressive public procurement on the one hand and local food chains on the other. Laudable as they are, these efforts have been limited in scope and character by the fact that they remain highly localised within the county. A unique opportunity for scaling up these efforts has recently presented itself in the form of the LabourPlaid Cooperation Agreement to extend free school meals to all primary school children, a radical social innovation described as "a transformational intervention in terms of child hunger and child poverty, which will support educational attainment and child nutrition and local food production and distribution, benefiting local economies". The key challenges facing the free school meals commitment revolve around infrastructure (kitchens, dining halls etc), staffing and food sourcing.

Outcomes

The outcome of this social innovation would help to bridge the long-standing gap between demand and supply of sustainable public food in Wales for both schools and hospitals. The proposed innovation would aim to scale up the Phase 2 Foundational Economy project that involves the Cook-Freeze project in Hywel Dda. A scaled-up initiative would aim to explore the feasibility of supplying locally-sourced nutritious food to public plates in the health and education sectors in and beyond Wales. The Hywel Dda project will require work on the scaling up of local supply (particularly horticulture to meet fruit and vegetable demand), cooperation between producers and consideration of joint processing facilities, all of which will also apply to local food ambitions for school food provision.

Whilst a cook-freeze solution makes sense for hospitals, schools have the ability to place a fresh school kitchen at the heart of school life. Effectively putting school lunch on the curriculum and fulfilling healthy eating educational aims in respect of cooking, learning to eat well and understanding the relationship between food and health, climate change and nature. All of which will need to accompany the introduction of universal free school meals at primary level if the initiative is to fulfil the transformational ambitions of the Cooperation Agreement. The catalytic effect that this will have on local economic activity and the development of local supply chains will not be limited to public sector demand as that same infrastructure is desperately needed in respect of local food reaching commercial markets.

The delivery vehicles for supplying sustainable food are therefore likely to be a mix of public sector infrastructure, social and cooperative enterprises and commercial business.

Actors

A foundational economy innovation pilot in sustainable food procurement would need to involve supply-side (farmers, growers) and demand-side actors (councils and health boards).

Timing

2022-23

Opportunity 4 – Circular Economy

Leveraging a CE Approach for the Net Zero Agenda

Overview

Circular Economy approaches are a key element in the Net Zero agenda (CCC, 2020). They offer new opportunities to inform and engage citizens in climate change discussions and help to change behavioural attitudes to repair and re-use. The success of the repair café social movement demonstrates the appetite for CE activities.

There is also an opportunity to engage local businesses to extend the uptake and influence of a CE approach across the county. At the ecosystem level, three open innovation approaches are relevant for businesses of all sizes to consider. They distinguish between those concerned with narrowing, slowing and closing the loops in a circular economy:

1. Narrowing focuses on efficiencies and seeks to reduce waste in design and production

2. Slowing seeks to extend the product life and thereby lower the environmental footprint and resource burden
3. Closing focuses on reusing resources (recycling)

In advancing this agenda it will be important to build on existing activities, for example CE schools education centres such as the John Burns Centre in Cydweli and at the National Botanic Gardens, the repair cafes already operating in the county, and exemplar CE firms such as NappiCycle in Ammanford. But most promising of all are the opportunities to develop the proposed *Eco Park*, by extending the work underway at Nantycaws and to begin to secure commercial benefits from the successful Slurry Project.

Outcomes

A Circular Economy approach can generate multiple dividends. First, educating school children and engaging citizens in one or more aspects of repair, re-design and repair will lay the foundations for delivering the behaviour change necessary to meet Net Zero aspirations. Second, CE can be a key element in the Carmarthenshire innovation narrative, highlighting exemplar projects and existing good practices and building on local comparative strengths. Third, the transformation of the Nantycaws site into a more fully operational CE facility will generate societal and environmental benefits alongside further commercial and innovation opportunities in and beyond the county.

Of all the CE opportunities in the county, the *Eco Park* concept at Nantycaws would seem to be the most promising, especially if CCC is allowed to develop the synergies between waste, energy and manufacturing. Currently, the biggest challenge to the Energy from Waste (EfW) opportunity is the moratorium on plants in Wales over 10MW in production capacity. But Welsh Government has recently acknowledged that there is a demonstrable need for new EfW capacity in SW and Mid Wales, so this opportunity needs to be explored as a matter of urgency.

Actors

These CE opportunities will require collaboration across the council, schools and further and higher education institutions, local businesses, charities and social movements. There is also a green skills component and this could be more fully developed through engagement with partners in the Swansea Bay City Deal. The EfW moratorium will need to be explored with Welsh Government ministers.

Timing

2022-2025

Annex

The authors

Professor Kevin Morgan is Professor of Governance and Development at Cardiff University, where he is also the University Dean of Engagement and co-convenor of the Centre for Innovation Policy Research. He is an advisor to the European Commission on regional innovation policy; he was a member of the OECD Multilevel Governance Team that produced the recent OECD report on Wales; and he is a visiting research fellow at Orkestra (the applied research institute of Duesto University) in the Basque Country.

Dr Dylan Henderson is a Lecturer in Innovation and Organisation at Cardiff University. His research and teaching interests include business innovation, digital transformation and regional development. He is a member of the Centre for Innovation Policy Research, and the Welsh Economy Research Unit at Cardiff University. As a former policy consultant he has extensive experience of developing and evaluating regional innovation policies across Europe, and acted as a researcher to Wales first generation regional innovation strategy – the Regional Technology Plan.

Professor Rick Delbridge FAcSS FBAM FLSW is Professor of Organizational Analysis and coconvenor of the Centre for Innovation Policy Research at Cardiff University where he leads the university in its partnership with the Cardiff Capital Region to design and deliver its challenge fund. He researches and teaches the management and organization of innovation. He is a member of the ESRC Strategic Advisory Network and the Board of the Campaign for Social Science. He is a member of the assessment panel for the Strength in Places Fund and Special Advisor on Research and Innovation to the Learned Society of Wales.

Consultees

David Gilbert	A local economic development consultant
Bronwen Raine	Antur Teifi
Wynfford James	Chair of the Arsyllfa: Observatory project
Emlyn Dole Jonathan Fearn Gareth Jones Jason Jones Jane Lewis Wendy Walters	CCC
Iestyn Davies	Colegau Cymru
Andrew Cornish	Coleg Sir Gar
Sean Gallagher	Cwm Environmental

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Jonathan Morris Anthony Rees	Cyfle
Sam Watkins	Delta Wellbeing
Robert Brown	Engineering consultant
Chris Hopkins Peter Jones Leighton Phillips Huw Thomas	Hywel Dda University Health Board
Richard Evans	Local Partnerships
Robin Davies	Magstim
Mark Grant	MG Commercial Business Solutions
Mark Roscrow	NHS Shared Services
Sharon Burford	Pentre Awel
Ross Gill	SQW
Jonathan Burnes	Swansea Bay City Deal
Gary Walpole (Circular Economy Innovation)	Swansea University
Owain Jones	TRJ
Barry Liles Medwin Hughes Gwilym Dyfri Jones	UWTSD
Phil Allen Simon Brindle Alan Davies Michael Groves Huw Morris Simon Ripton Richard Sewell Terry Stubbs	Welsh Government
Richard Dooner	WLGA

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Simon Wright	Wright's Food Emporium
Cefin Campbell	Welsh Senedd

Plus the CCC Business Advisory Group

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