IRISH REGIONAL ANALYSIS

BUILDING REGIONAL RESILIENCE TO INDUSTRIAL STRUCTURAL CHANGE

Southern Region - Ireland

Irish Partner
Project Partner: Cork Institute of Technology

CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

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INTRODUCTION

FOUNDATION is an Interreg Europe funded SME Competitiveness project that brings together nine partners in a consortium led by Cork Institute of Technology from 1/08/2019 to 31/07/2023. Presently, across Europe, public bodies are pressed by an increasing need to provide preparatory support to the economic ecosystem in advance of the closure of anchor firms in their region which act as significant employers. The impacts of a closure of course go beyond direct employees and ripple, wave like throughout the regional services sector and economy. Management of such anticipated structural change requires proactive renewal of business approaches and policy supports. Regions are encouraged to introduce pilot projects based on their own strengths and to provide appropriate business supports for the re-alignment of the regional industrial base. This proactive approach by regional stakeholders is critical to building the resilience of these regions and enabling them to adapt to change.

The importance of SMEs and start-ups to the regional economy is widely recognised in terms of the provision of employment, contribution to GDP, driving innovation and supporting regional resilience. It is imperative that the relevant regional stakeholders keep informed, inspired and equipped to provide the appropriate SME and start-up supports, particularly in regions anticipating structural change.

FOUNDATION links its project partners to develop Regional Action Plans and an overall Framework and Roadmap for Anticipated Structural Change. It is imperative that industry players, business support organisations and policy makers understand how their ecosystems work and when faced with shocks (firm closures) to collaboratively develop alternative growth and employment through supportive policies and programmes to boost SME competitiveness. Key project activities included the exchange of experience and learning through interregional events (4 workshops, 4 seminars and 9 study visits).

Foundation Project Partners

The purpose of this regional analysis is to showcase how the Southern region has developed resilience and supported industrial transition in the past, with the examples of the move away from primarily production line industrial manufacturing towards more high-tech sectors e.g. pharmaceuticals and information technology.

Covid-19 has had a devastating impact across all of Europe, and the Southern region of Ireland is no different, some sectors have been impacted in a highly negative manner seeing government restrictions severely limit how they provide their goods and services and having to shed employment. Whilst others have thrived as the demand for their product and services have increased.

An analysis of the cyber security and tourism sectors within the region, identifies a number of recommendations to support these ecosystems. Key learnings and knowledge transfer of good practices from Foundation partners can be a big support to how we buttress resilience in these key sectors for the region.

IRELAND - SOUTHERN REGION

The Cork Institute of Technology is the Irish partner representing the Southern region and is lead partner in the FOUNDATION consortium.

Capital: Cork, Limerick and Waterford

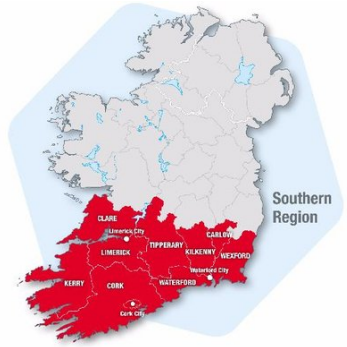
Size: 29,590 sq. km^2

Population: 1,580,000

National GDP: 163,938.7 (2012)

National GERD (%): 1.58 (2012)

% of Unemployment: 5.4 (March 2019)



The Southern Region is comprised of 9 counties (10 Local Authorities with Cork City Council and Cork County Council in Cork), all 6 counties of Munster (Cork, Clare, Kerry, Limerick, Tipperary and Waterford) plus the 3 South-East counties of Carlow, Kilkenny and Wexford. It covers 29,590 sq. km representing 42.4% of the landmass of the country. The Region's main urban centres are the cities of Cork, Limerick and Waterford. With an average population density of 48 persons per sq. km it is predominantly a rural region. The Region is subdivided into sub-regions or Strategic Planning Areas (SPAs), namely the Mid-West, South-East and South-West.

A number of Universities, Institutes of Technology and research centres, both private and public, help drive and support the innovation potential of the region. The region is also a significant tourism destination due in part to its renowned natural beauty, wonderful coastline and the presence of important national tourist attractions such as: Cliffs of Moher, Fota Wildlife Park, Blarney Castle, Lakes of Killarney, Bunratty Castle, Carrauntoohil and Gougane Barra to name a few.


1,585,906
almost 10% growth 2006-2016 and over a third of the State's total population living here.
Population
3
Cities of regional and international significance
Cork, Limerick & Waterford are projected to be amongst the fastest growing locations in the State over the next 20 years plus.
over 648k
almost a third of the State's total at work in the region.
Labour Force
2
UNESCO Learning Cities
3
WHO Healthy Cities
3
Smart Gateway Cities
Productive agricultural region and rural areas supported by a significant network of towns and villages.
All Tier-1 and Tier-2 Ports of National Significance outside of Dublin
Universities
2
5
Institutes of Technology
2
Regional Airports
State Airports
2
Clean Renewable Energy Potential
Diverse Industrial Base with established clusters and specialism's
Good quality farmland with High Agricultural Yields - food and beverage
Extensive coastline with significant Marine Resource potential
A region possessing all three of the National Tourism Corridors, Wild Atlantic Way, Ireland's Ancient East and Ireland's Hidden Heartlands
WILD ATLANTIC WAY
SLÍ FHÁIN AN ATLANTAIGH
IRELAND'S ANCIENT EAST
Ireland's Hidden HEARTLANDS

REGIONAL POPULATION AND INDUSTRIAL STATISTICS

With one-third of the State's population (1.58 million), the Region is the second most populated Regional Assembly area and all local authority areas have experienced growth since 2006 (albeit at differing levels).

The highest rates of population increase between 2006 and 2016 are in commuter areas near to Cork and Limerick Cities and in areas close to other larger settlements. Wexford town and areas close to Gorey witnessed large increases linked to population growth associated with the Dublin Metropolitan and commuter areas. Population decline was seen in 402 Electoral Districts (27%), mostly in rural and peripheral areas, with largest decreases in areas of Clare, Kerry, Limerick and Cork. Population decline is also evident in some areas within the cities of Cork, Limerick and Waterford. The overall age structure for the region is very similar to that of the State, with higher rates in the older working ages and beyond (45 plus). The largest increases in population are expected in the 15-24-year cohort (+26%), 45–64-year cohort (+14%) and 65 plus (+56%). The numbers in both the 0-14-year and 25-44-year cohorts are projected to decrease by c. -14% each. This change in age profile has consequences in terms of how we plan for the Region's future. Detailed demographic analysis is available in the SRA Socio-Economic Evidence Baseline Report 2018 which is published with the Draft RSES.

With current employment nearly back to the peak levels seen before the last economic crisis, the Region's enterprise base is more diversified with a strong proportion in services. In Q2 of 2018 the region had an unemployment rate of 6.4% In general, there is very little difference in the rates between the three SPAs. Of the three, the Mid-West SPA had the highest average disposable income per person in 2014. The disposable income per person of all three SPAs was lower than the State average. However, relative to the other two Assembly Regions, the SR had a marginally higher disposable income per person.

In 2016 there were 78,000[1] active enterprises in the region made up of indigenous and foreign owned companies operating across a wide range of sectors from traditional, ICT, Pharma, and emerging sectors. The headquarters of a wide range of multinational companies specialising in areas such as ICT, Biopharma/ Pharma and Medical Technologies are evident in the region particularly around the main cities. As expected, Cork is the most dominant location for active enterprises at both the SPA and local authority level with a total of 28,800 in 2016.

Organisations supported by Enterprise and IDA Ireland currently employ over 138,000 people, contributing 19.3% to total employment regionally. Detail by sector is shown in Figure 2

Since 2000, agency supported employment has increased by over 25 thousand. There is evidence of strong growth within business and financial services, and a decline in 'other manufacturing'. The proportion of employment related to goods has decreased, reflecting the global trend toward greater contribution to employment and economic activity from internationally traded services.

[1] CSO Business Demography by Activity, County, Year and Statistic

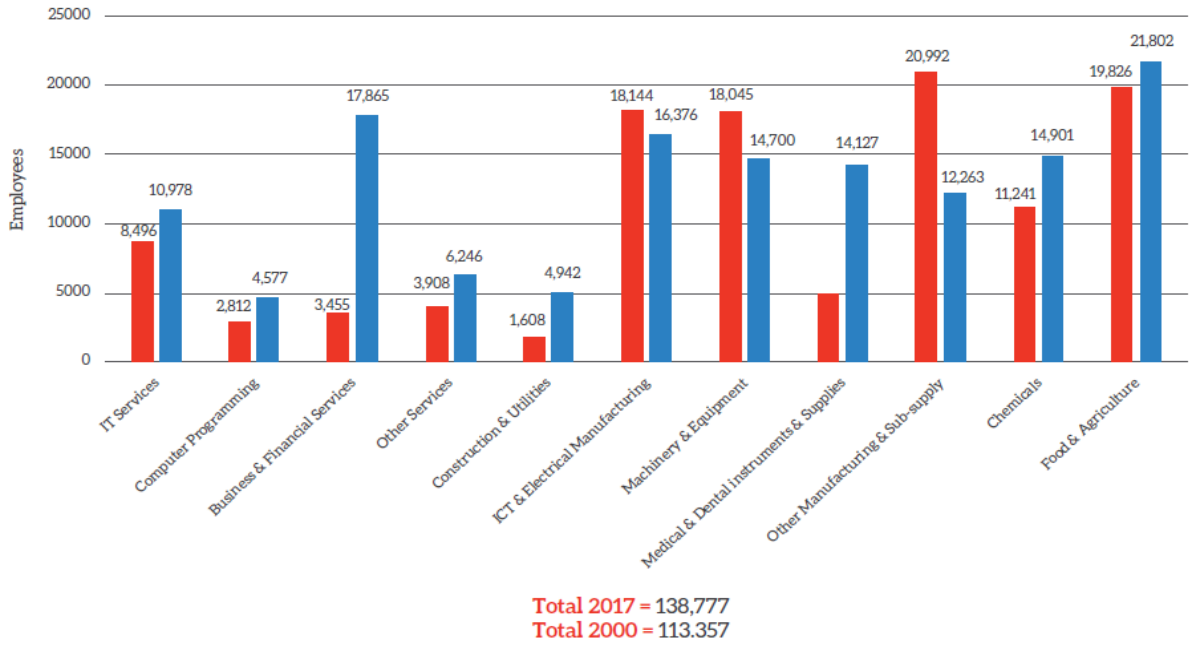


Figure 1: Southern Region: Agency Supported Firm Employment by sector for 2000 & 2017

By 2040 it is likely that the population of our region will grow by 380,000 people[2] to almost two million. This growth will require new jobs and new homes. It will also require us to plan for the future in a different way and to avoid a "Business as Usual" scenario, which if continued unchecked will deteriorate our quality of life, our environment, erode competitiveness and compound regional disparity.

[2] https://www.southernassembly.ie/regional-planning/regional-spatial-and-economic-strategy

ECONOMIC RESILIENCE ACROSS EUROPE

The 2007/8 economic crisis was the most severe shock to global financial markets since the great depression in the 1930s (Bordo and Landon-Lane, 2010; Barranco and Sudrià, 2012). Following the crisis there was a re-emergence of interest in how regional economies respond to and recover from economic shocks (Martin, 2012; Fingleton, Garretsen and Martin, 2012; Martin and Sunley, 2015; Doran and Fingleton, 2016). The term resilience in economic geography refers to the ability of a region 'to anticipate, prepare for, respond to and recover from a disturbance' (Foster, 2007, p.14). There are three main conceptualisations of resilience; engineering, ecological, and evolutionary. Engineering resilience is an equilibrium based notion of how an entity or system is plunged into disequilibrium, and off its steady state, following a shock and can defined 'how fast the variables return towards their equilibrium following a perturbation' (Pimm 1984, p.322). The concept of ecological resilience can be defined as the 'the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist' (Holing 1973, p.41). The region may settle on an inferior path post-shock or recover and assume a superior path post-shock.

However, these two forms of resilience have been criticised as too limiting and evolutionary resilience has gained significant focus in recent years. Martin and Sunley (2015) introduced such a conceptualisation of resilience defining it as a changing process that is adaptive. The adaptive capacities are based on the ability of the region to resist, reorientation, and recover following shocks. Martin and Sunley (2015, p.13) defined 'adaptive resilience' as 'the capacity of a regional or local economy to withstand or recover from market, competitive and environmental shocks to its developmental growth path, if necessary, by undergoing adaptive changes to its economic structures and its social and institutional arrangements, so as to maintain or restore its previous developmental path, or transit to a new sustainable path characterized by a fuller and more productive use of its physical, human and environmental resources'.

There are four broad ways of measuring resilience; (i) case studies, (ii) indices of particular regions in a descriptive discussion, (iii) Time series analysis focusing on the evolution over time, (iv) causal economic models. In this overview of regional resilience, it is the final approach, causal economic models, which is employed. The conceptualization of Martin and Sunley (2015, p.13) and Martin et al (2016) is employed to assess the resistance and recovery of regions following the 2007/08 economic crisis.

In Figure 2 the left hand side shows the resistance to the 2008 economic crisis while the right hand side shows the recovery following the 2008 economic crisis. In both instances the darker red colour shows that that region performed relatively better than the European average at resisting the shock (in the left figure) or recovering from the impact of the shock (in the right figure).

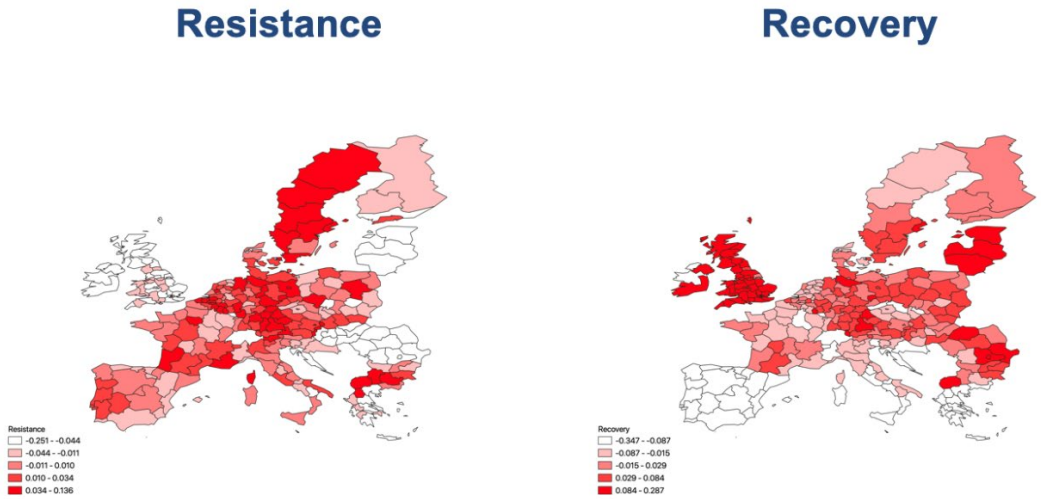
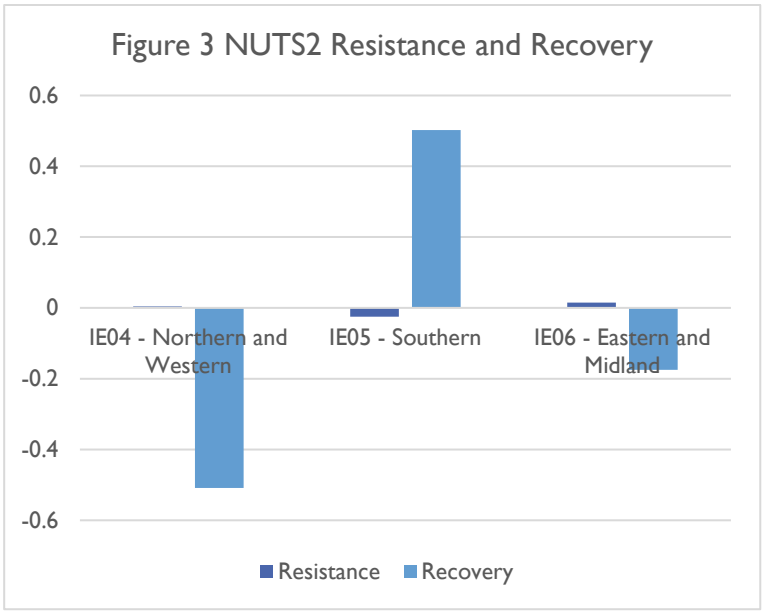


Figure 2: The resistance and recovery of European Regions to the 2008 economic crisis

IRELAND (CORK) – NUTS 2 SOUTHERN REGION

To provide insights into the impact of past shocks on this economy and its relative resistance and recovery following these shocks Figure 3 presents an analysis of the resilience of Irish regions. We can observe that the Southern region resisted the impact of the 2008 economic shock relatively strongly and also exhibited a strong recovery post 2009 relative to the other regions.



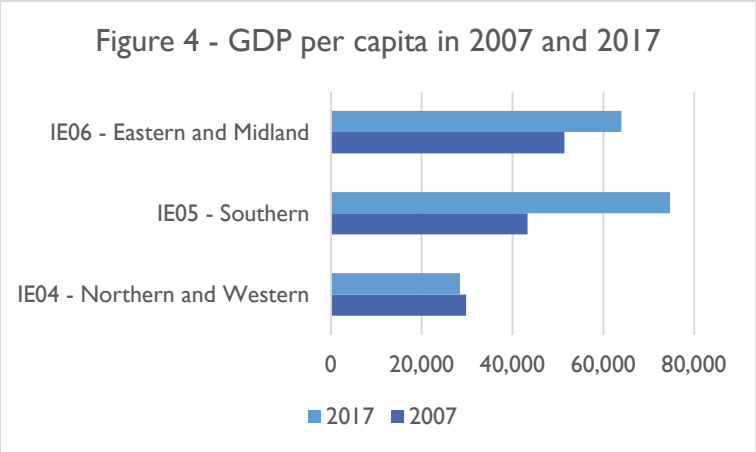
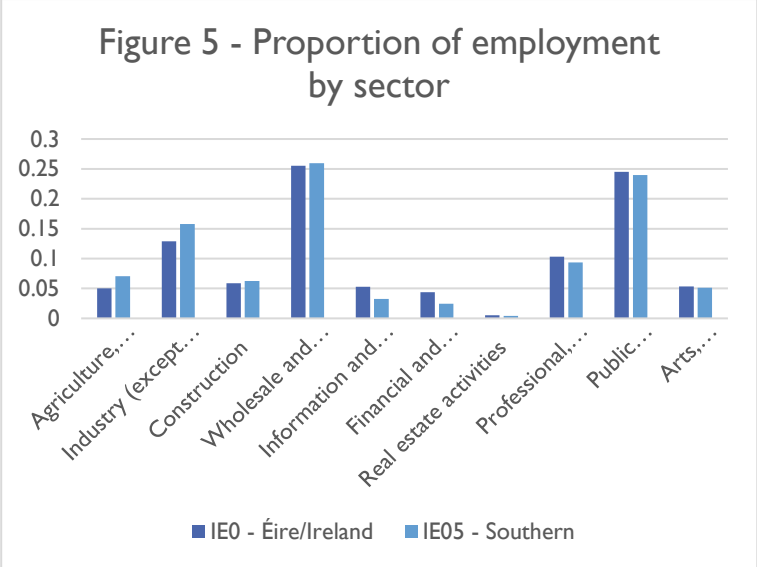
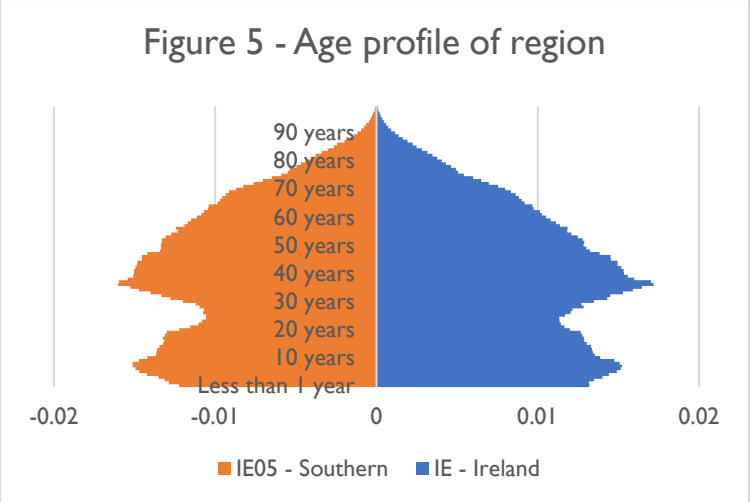


Figure 4 shows the impact of this strong recovery has resulted in the Southern region possessing a significantly higher GDP per capita in 2017 than in 2007. GDP per capita in the region exceeds the national average by a significant proportion.

Figure 5 outlines the proportion of the workforce employed across sectors in the Southern region is very similar to that of the overall Irish economy. However, there are slightly more people employed in the agriculture, forestry and fishery sectors of the economy with a lower proportion employed in information and communication, and financial and insurance activities.





The age profile of the Southern region is similar to the national average (Figure 6), with the average age only being one years older than the national average of 36 years old. However, the region does display an aging demographic with an increasing number of individuals over the age of 40.

Regarding the engagement of the region in high-technology employment, Figure 7 compares the Southern region to the national average over the period 2012 to 2018 (data prior to 2012 is not available at the regional level. It can be noted that the region begins with a relatively lower levels of employment in high technology sectors but converges to close to the national average.

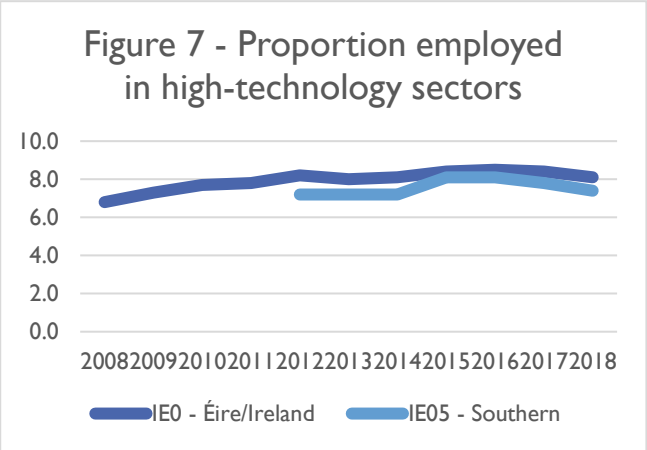


Table 1 below presents a brief comparison of the regions participating in this project. Significant variations can be observed across the regions with the Southern region of Ireland standing out with an exceptionally high level of GDP per capita and high-tech employment. While the Podkarpackie region of Poland has the lowest level of GDP per capita while the Vidurio ir vakaru Lietuvos regionas of Lithuania has the lowest level of high-tech employment as a proportion of employment.

Region	GDP - 2017	High Tech Emp % - 2018
FI1D - Pohjois- ja Itä-Suomi	33,800	4.10%
UKD3 - Greater Manchester	30,500	5.00%
IE05 – Southern Region	74,700	7.40%
LT02 - Vidurio ir vakaru Lietuvos regionas	12,400	1.50%
PL82 - Podkarpackie	8,500	2.10%
HU22 - Nyugat-Dunántúl	13,400	3.90%
AT31 - Oberösterreich	43,100	3.00%
ITC2 - Valle d'Aosta/Vallée d'Aoste	35,200	3.30%
ES62 - Región de Murcia	20,600	1.60%

Table 1: Comparison of Study Regions

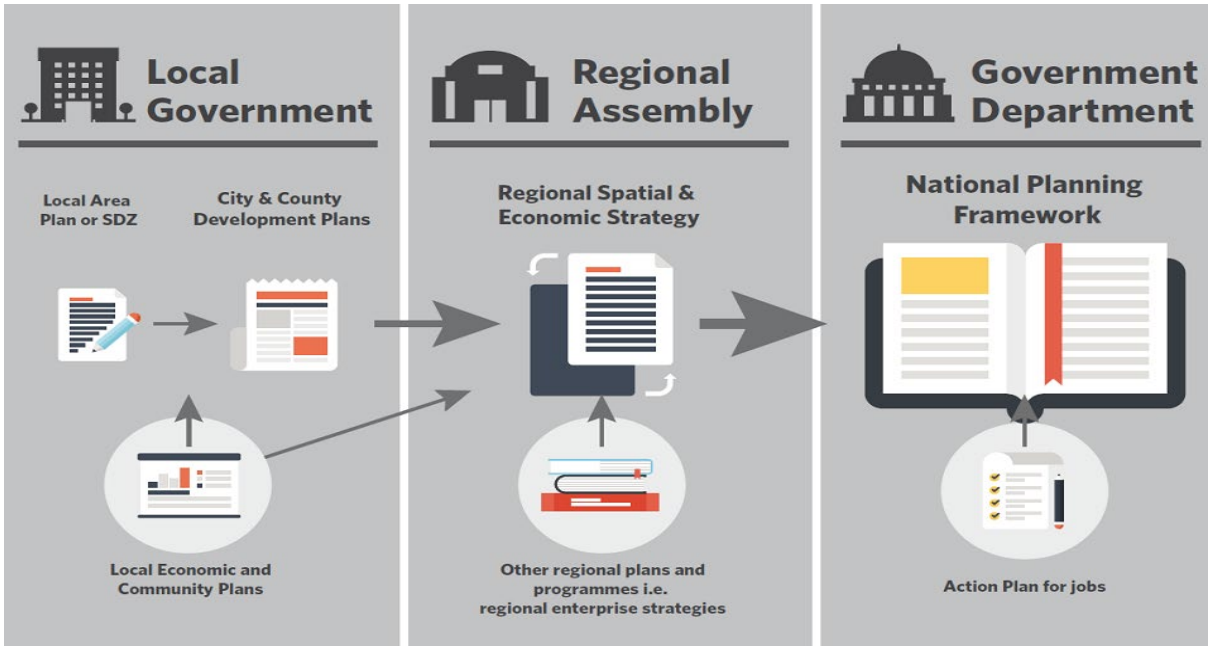
In the next section the policy ecosystem in the Southern Region of Ireland is outlined, and how regional policy is connected to national Government policy and feeds into local policies at a sub-regional level.

KEY POLICY PLAYERS IN THE SOUTHERN REGION

This section explains how the policy ecosystem is connected in the Southern region and how collaboration occurs regarding different, schemes, initiatives and programmes.

As a country that is governed centrally, much of the direction in terms of economic development comes from government departments through the national planning framework and national economic policies. However, for the policies to be successful they need to be implemented at regional and local levels. Within the Republic of Ireland there are three regional assemblies that are responsible for supporting and implementing government policy.

The Southern regional assembly uses the Regional Spatial and Economic Strategy (RSES) in order to develop cities within its regions with the aim of achieving critical mass and providing a counterbalance to already overpopulated areas. Other regional programmes such as regional enterprise strategies feed into and help to develop this regional spatial and economic strategy, along with inputs from all regional stakeholders from industry academia and local government.



Source: Eastern and Midland Regional Assembly https://emra.ie/regional-spatial-and-economic-strategies-2/

The Southern Region is further separated into three strategic planning areas (the South-East, South-West and Mid-West regions). These regions are comprised of a combination of cities, towns and villages. There are over 45 villages which have a population of less than 5,000, fifteen towns with a population of around 10,000 people, and there is one city within each of the strategic planning areas (Cork, Limerick, Waterford).[3]

[3] Southern Regional Assembly (2019), Regional Spatial & Economic Strategy, Available online @ https://www.southernassembly.ie/regional-planning/regional-spatial-and-economic-strategy

Much of the planning within these regions is conducted at a local level by the different local government entities such as the Cork County Council and the Cork City Council. These local councils develop local area plans, city and county plans and economic and community plans. All of which would ideally feed into supporting the achievement of actions set out by the regional assembly. However, there are quite an extensive spectrum of development needs and requirements across the diverse regions within the strategic planning areas, and each local government would have their own specific focus. For example, Cork city council would have quite an urban focus with a view to enhancing growth. In contrast, Cork County council are focused on rural development and the potential or challenges associated with this.

The difficultly therefore lies in the incorporation of these development needs into a larger plan and the encouragement of collaboration beneficial to both parties. This type of collaboration does not currently take place in any formal capacity and there is very limited co-ordination between local authorities. Therefore, in this regard, the local government authorities would depend on the regional assemblies to encourage connection and collaboration in relation to planning and across various schemes, initiatives and programmes.

In the next section an example of how industrial transition has taken place previously in the Southern Region is examined.

INDUSTRIAL RESTRUCTURING IN THE SOUTHERN REGION

This section will describe a case study of the economic restructuring of Ford and Dunlops in the Southern Region, which has led to a new direction for the economy in the region and Ireland as a whole. The background information for this case comes from the book 'Crisis and Comeback: Cork in the Eighties' by Michael Moynihan (2018).

ECONOMIC RESTRUCTURING - THE CASE OF FORD AND DUNLOPS

Ford Factory, Co. Cork, 1930

During the early 1970s, the global economy entered into an economic recession, partly as a result of the global energy crisis. Many countries saw their GDP fall and levels of unemployment rise. Whilst many places were significantly affected by this downturn, this was not the case for Cork. With companies such as Ford, Dunlop and Verolme providing stable, secure and permanent employment, the region emerged from the recession relatively unscathed. These companies, especially Ford, were the corner stone of the manufacturing industry and a part of the city's identity. As a result of this, many people believed that these companies would never leave Cork.

However, the 1980s were to be a very tough time for the people of Cork and this all began in June 1980, when a gas explosion cause hundreds of thousands worth of damage to the famous English market located in the city centre. This was the first of a number of blows that would hit Cork, however nobody expected that over the period of less than two years between the start of 1983 and the end of 1984 Ford, Dunlop and Verolme had all closed their doors and left thousands of people unemployed. The loss of these firms had a significant impact on the greater Cork area and contributed to a 25% reduction in manufacturing jobs during the early 1980s and a removal of over 5,400 jobs from the Cork economy.

Cork's English Market after the fire in 1980.

In addition, due to cut backs Cork's North Infirmary hospital was closed in 1987, the English Market suffered a second fire in 1986 and was nearly turned into a carpark in 1988, the survival of both breweries in the city centre came under threat during this decade and there were also talks that Cork airport would close. The events that unfolded through the decade resulted in Cork having significant levels of unemployment, and an overall feeling of despair existed within the city.

In order to emerge from this recession some forward thinking and strategic planning was required. It was a number of years before this happened but ultimately the turnaround was as a result of the planning by a number of government organisations such as the IDA (Industrial Development Authority) and the support of local stakeholders like Cork Institute of Technology and University College Cork. The focus changed with a move away from the traditional manufacturing market and a restructuring towards modern technologies. The economic restructuring resulted in the emergence of two big sectors in Cork.

The first of these is the technology sector and the first step towards Cork becoming a technology hub was in October 1980 when the IDA successfully enticed Apple (a relatively new organisation at the time) to base its European headquarters in Cork. There were several different elements that differentiated Cork from the other locations being considered, these included capital grants, training grants and a favourable taxation system. Additionally, Cork had an English speaking, young and well-educated workforce and a factory that was ready for occupation located on the North side of the city. The readymade factory was a crucial element as Apple were growing at a significant rate and in order to meet the demands of the American and European markets, they could not afford to lose time on the construction of a new facility. Apple now employs over 5,000 people at its Cork facility and has become one of the largest taxpayers in the country.

Steve Jobs visits Apple's new facility in Cork, October 1980.

Since Apple first opened its doors in Cork, many more tech companies have followed suit. Dell EMC, which opened its Cork base in 1988 and currently employs around 2,500 at two different facilities across the city. Additionally, Cork has also become the base for IT firms such as Amazon, IBM, McAfee, SolarWinds, Siemens and many more, which has really solidified Cork's reputation as an attractive location for technology firms looking to gain access to the European market.

Cork Regional Technical College, in 1975 (Left) and EMC, Co. Cork in 1988 (Right)

In addition to the targeting of technology firms, the IDA as part of the restructuring of the Cork economy targeted the pharmaceutical sector, which was to initially be based at a 1,000-acre site in Ringaskiddy. The first of the companies attracted to Cork was Pfizer which opened it's first plant in 1969. Pfizer was the first pharmaceutical manufacturing multinational to locate in Ireland and invested an initial €10 million in its base. This investment was supported with the opening of a second plant in Little Island, Cork almost ten years later in 1978.

These investments came at a time when Cork was on the verge of chaos and enabled other major pharmaceutical firms to recognise Cork as a location with many advantages including a skilled workforce, a gateway to Europe and a low level of corporation tax. Pfizer now employs over 3,400 people in Ireland and is worth €2 billion annually to the national economy. In addition to Pfizer, Cork is also now home to many of the world's top pharmaceutical firms including Novartis, Merck, GlaxoSmithKline, Johnson and Johnson, AbbVie, Gilead, Stryker, Eli Lilly and BioMarin.

In both sectors the support of CIT and UCC was essential for attraction of the multinational companies. Whilst UCC was established in 1845, the founding of CIT (then known as the RTC) only took place in 1974 in response to reports issued on industrialisation and the recognition of the need for technical education.

In 1979 the head of Cork Regional Technical College liaised with Apple, via IDA Ireland, in relation to the courses that were on offer and many of the engineers that emerged were a key component of Apple's Cork workforce. The same can be said for when EMC[4] were trying to make a decision on where they would open their European base. The boss of Dell EMC at the time said that the decision was made as a result of the willingness of RTC to adapt its courses to suit their requirements. Whilst the RTC has changed name to CIT and from January the 1st 2021 Munster Technological University (MTU), both academic institutions MTU and UCC have continued to work closely with local large firms in terms of the development of course content and a focus on industry ready employees or the training, retraining and upskilling of the workforce.

Whilst the attraction of multinationals across various sectors into Cork has been hugely beneficial not only on a local level but an international level, there is always the risk that these companies could decide to pull out of Ireland at any time. However, since the shock of the 1980s Cork has become a much more resilient, adaptive and forward thinking region. This is in addition to the highly skilled workforce, the majority of would have high employment prospects in the event of job losses, would enable the region to cope better with the loss of a significant employer than it had done previously.

The next section looks at current industry sectors which are experiencing transition in the region.

INDUSTRY IN TRANSITION – CASE STUDIES

In this section we will focus on two industries in different elements of transition, the cyber security sector has become more prominent and increased its business levels during the challenges brought about by the Covid-19 pandemic. Whilst, on the other hand the Tourism sector has been hugely limited by the Covid-19 restrictions in how it can and has operated throughout the pandemic.

[4] EMC is now known as Dell EMC as on October 12, 2015, Dell Inc. announced its intent to acquire EMC in a cash-and-stock deal valued at $67 billion, which has been considered the largest-ever acquisition in the technology sector

BACKGROUND TO STRUCTURAL CHANGE

In early 2020, the highly infectious virus known as Covid-19 which was originally transferred from animals became the cause of a global pandemic and impacted the lives of people across the world. In order to combat the virus, enable the health systems to cope, and prevent deaths, governments were faced with the challenge of reducing the rate of transmission across the population. In Ireland, the announcement of the first extreme restrictive measures to prevent the spread took place on the 12th of March. At that time, all schools, colleges, crèches and cultural institutions were closed, people were encouraged to work from home where possible and pubs/nightclubs began to close due to public health safety concerns. It was thought that these restrictions would only last until March 29th and initially there was a naivety within the public mind that it would be over at that time.

However, as the virus' rate of transmission continued to rise, the Irish government announced that on 27th of March the country would go into a full lockdown with all non-essential businesses closing and the only exceptions for travel would be for essential work, to shop for food, and for healthcare. Businesses would not be allowed to open their doors again until the 8th of June with Cafes, restaurants and gastro pubs having to wait until June 29th and only with strict adherence to social distancing which would result in a reduced capacity. In addition to this, the country suffered a second wave of the virus and a second lockdown period of six weeks was announced on the 21st of October. In line with the first lockdown all non-essential business were told to close their doors.

THE ECONOMIC SITUATION – ANALYSIS & METHODOLOGY

As a result of the virus and the measures taken in order to prevent its transmission, the Irish economy has suffered greatly. By the second quarter of 2020 the Irish economy is expected to decline by 10.5% and unemployment is set to rise by 22% which is a big change from being considered one of the fast growing economy in the European Union over the last few years prior to Covid-19. However, not all regions will be affected by the pandemic to the same degree and similarly not all sectors will have the same level of impact. A European Commission report[5] for Ireland states "the socio-economic consequences of the pandemic are likely to be unevenly distributed across regions due to different specialisation patterns. This entails a substantial risk of widening regional disparities within Ireland."

The Southern region has of course been greatly affected like so many regions across Ireland and it will face a difficult road to recovery after the pandemic. During the first lockdown period, at the height of the pandemic over 133,820 people from the South West region were receiving either a temporary wage subsidy or the pandemic unemployment payment from the government. The worse affected sectors or those with the highest level of pandemic unemployment payment were in tourism, hospitality, construction and retail.

[5] European Commission, (2020), 'Recommendation for a Council Recommendation on the 2020 National Reform Programme of Ireland and delivering a Council opinion on the 2020 Stability Programme of Ireland'

However, whilst the economy has and will continue to be affected greatly by the disruptions of the Covid-19 pandemic, many businesses have adapted to the changing environment in which they operate and this has come mainly as a result of an increased reliance on technology. Employees have been advised to work remotely where possible. This has not only put a strain on the organisation in terms of the supply of appropriate technology but also on ensuring that employees are working in a secure technological setting whilst remote working.

For some sectors, deemed 'non-essential,' they have experienced huge difficulties in providing their services in a safe manner and their operations have been heavily restricted by government. The pandemic has caused many firms to move elements of their business online, which has increased focus on the cyber security of their networks, data and personnel. This has increased business for the cyber security sector whilst other have declined.

In the Southern region we will utilise the V-LINC analysis (Hobbs, 2010; Byrne, 2016) to Interview firms in two sectors to showcase the impact Covid-19 is having and identify policy recommendations for their development and learning opportunities from partner regions. V-LINC[6] is a methodology for identifying, recording, and analysing the linkages that firms engage in. It categorizes these linkages, and groups them by geographic scope. Furthermore, V-LINC records the business impact of linkages based on the perceptions of firm personnel who engage in the linkages with other companies and organisations. Data for V-LINC is collected by structured interviews of company personnel. Likert scale questions are employed to gauge the business impact of individual linkages. V-LINC maps give a visual representation of the relative reliance on Local, National, European, or International linkages of a company and when combined, of a cluster (Figure 2). V-LINC facilitates policy development at local, regional, and national levels, through the aggregation of data from a sample of firms. The confidentiality of firms' linkages is maintained throughout.

V-LINC assigns company linkages to one of eight categories (Table 2). Besides linkages along the supply chain, namely those which provide Inputs and Specialist Services to firms, and Output linkages which provide markets for goods produced. V-LINC adds five other categories: those with Industry Peers, with Industry Associations, with Research & Development partners, with Training partners and with Government Agencies. The linkage categories in V-LINC derive from Porter's (1990, 1998b) discourse on the interactions of companies in a cluster. V-LINC responses are collected through structured interviews to reveal the business impact of linkages by expert company personnel. Likert scale responses convert qualitative judgments into quantitative data. The impact of the linkages are recorded and scored between 0 and 40, then arranged into four bands based on their importance: High (>30 to 40), Medium (>20 to 30), Low (>10 to 20), or Tenuous (0 to 10).

The Cyber Security sector[7] is analysed firstly below, followed by the Gaeltacht Tourism[8] sector.

[6] V-LINC is a hybrid methodology developed by Byrne (2016) he combines the *'Four i Linkage Scale'* (Hobbs, 2010), network theory and visualisation techniques to map and trace cluster ecosystems.
[7] Further detail on the South West CyberSecurity V-LINC analysis can be found here
[8] Further detail on the Múscraí Gaeltacht V-LINC analysis can be found here

V-LINC ANALYSIS: CYBER SECURITY SOUTH WEST OF IRELAND

The cyber security industry has been growing at a significant rate over the last number of years due to increased threat of tech crime and Ireland has been identified as having the potential to become a global cyber security centre of excellence. This is especially the case in the South west region where nearly 60 overseas technology companies and more than 1,000 people work in cyber security related jobs. The South West is home to companies like; AT&T Security, Cylance, eSentire, FireEye, Forcepoint, Keeper Security, Malwarebytes, McAfee, Sophos, Smarttech, Trend Micro, and TransUnion. The city of Cork is home to nearly 60 technology companies involved in manufacturing, software development and global business services. In addition to this, several companies are growing their cyber security teams internally. Companies like IBM, Clearstream, Johnson Controls, VMware, Qualcomm, Apple, Amazon, Dell EMC, Inhance, and McKesson are all developing in-house cyber security teams.

These types of firms have an essential part to play in the adaption to life during the pandemic and the economic recovery from it, so their retention is very important. In order to analyse these firms and identify issues that may result in the loss of business within the region, a V-LINC analysis of the sector was conducted in early 2020.

Table 2 and Figure 8 showcase the firms and their respective size in the South West who participated in the analysis. It provides the percentage of linkages reported in each of the (8) categories, along with the total number of links engaged in. Table 2 reports that the most frequent linkages per category for the RFG are in Outputs, which account for 29% of linkages reported; followed by Industry Association (13%), Training (12%) and Specialist Services (12%). This is not unexpected, as firms exist due to the continued development of revenues. Whilst, Specialist Services and Training feed into a Cyber firm's product and service offering, Industry Associations links may provide access to new customers. The low numbers of industry peer linkages (7%) may indicate difficulties in building trust-based collaborations with competitors, which Porter (1990, 1998b) highlights as essential in a cluster.

Geographic proximity of firms, local connections with other firms or organisations, and face-to-face interaction, play a central role in cluster theory and are attributed to producing higher growth and innovation in clusters. Porter (1998a, p 226) believes, "a cluster is a form of network that occurs within a geographical location, in which the proximity of firms and institutions ensures certain forms of commonality and increases the frequency and impact of interactions."

However, modern advances in communication and technology have impacted the need for geographic proximity and allow connected firms to be more widely dispersed across a region, or even countries. Firms may source inputs from multiple regions, may engage in R&D with research organisations in foreign countries, and sell into international markets. Therefore, it is important to look at the geographic scope of linkage categories, and also the business impact of linkages which occur over different geographic scopes.

Company Name	Firm Size	GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
AT&T Cyber Security	Medium (50 - <250)	2%	2%	2%	9%	70%	4%	8%	4%	53
Cork Cyber Sec SME	Medium (50 - <250)	9%	18%	18%	0%	18%	0%	27%	9%	22
Cyberlink Security	Micro (<10)	11%	11%	5%	0%	47%	5%	16%	5%	19
eSentire	Medium (50 - <250)	6%	22%	11%	6%	28%	0%	17%	11%	18
JRI America	Medium (50 - <250)	9%	18%	14%	5%	14%	5%	14%	23%	22
McAfee	Large (250+)	2%	13%	7%	0%	29%	7%	29%	13%	45
McKesson	Large (250+)	13%	17%	13%	3%	13%	17%	3%	20%	30
Qualcomm	Medium (50 - <250)	7%	28%	10%	0%	10%	7%	0%	38%	29
Sophos	Small (<50)	3%	6%	39%	0%	39%	0%	8%	6%	36
Trend Micro	Large (250+)	19%	8%	3%	19%	19%	6%	11%	13%	62
UTRC	Medium (50 - <250)	7%	19%	0%	12%	16%	42%	5%	0%	43
RFG Average		8%	15%	11%	5%	28%	8%	12%	13%	34
Total (n)		**31**	**49**	**37**	**25**	**111**	**36**	**45**	**45**	**379**
Most Populous (Rank 1-8)		7th	2nd	5th	8th	1st	6th	3rd	3rd	

Table 2: Distribution of Linkages by Category and by Firm.[9]

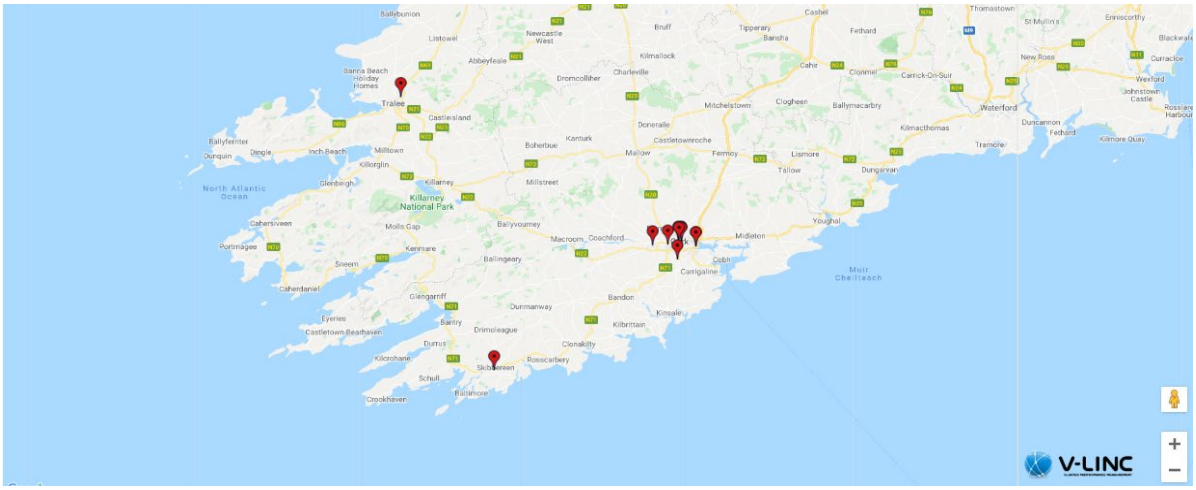


Figure 8: Map of the Respondent Firm Group – Office Locations in South West Ireland

Linkage categories by Geographic Scope:

In this study, Local linkages are those which occur within the South West region of the Republic of Ireland; National linkages, are those outside of the South West and in the Republic of Ireland; European linkages are the connections outside the Republic of Ireland; and International are all other linkages outside of Europe. Table 3 and Figure 9 display the linkages reported at each geographic level for each of the eight linkage categories. Table 3 distinguishes the dominant geographic scope for each category and shows that 95% of Output linkages in this study are reported outside Ireland, of which 54% are destined for the European marketplace and 41% Internationally. Porter (1998b) places great emphasis on linkages to and support from organisations and businesses, within the locality.

[9] Note to Table 2: The eight linkage categories are: Government agencies (GA); Industry Association (IA); Industry Peers (IP); Inputs (IN); Output (OU); Research & Development (RD) Specialist Service (SS) and Training (TN) linkages.

Geographic Scope	Local	National	European	International	Total (n)
GA - Government Agencies	23%	52%	23%	3%	31
IA - Industry Association	65%	18%	12%	4%	49
IN - Input	14%	16%	27%	43%	37
IP - Industry Peers	0%	12%	56%	32%	25
OU - Output	2%	3%	54%	41%	111
RD - Research & Development	44%	14%	31%	11%	36
SS - Specialist Service	53%	22%	18%	7%	45
TN - Training	64%	16%	9%	11%	45
Total (n)	**115**	**60**	**120**	**84**	**379**
Total (%)	**30%**	**16%**	**32%**	**22%**	

Table 3: Distribution of Linkage Categories by Geographic Scope

If local linkages are critical to the functioning of a cluster, Table 3 shows that Local linkages make up the second largest proportion (30%) of all linkages reported in the study, the remaining 70% being divided between National (16%), European (32%) and International (22%) linkages. However in contrast to the overall linkages in terms of just inputs, 100% of these linkages are reported at National, European and International scopes This might be due to the cyber security sector being predominantly service based, and inputs required to support such services, relate to other software or technical inputs to build one's service.

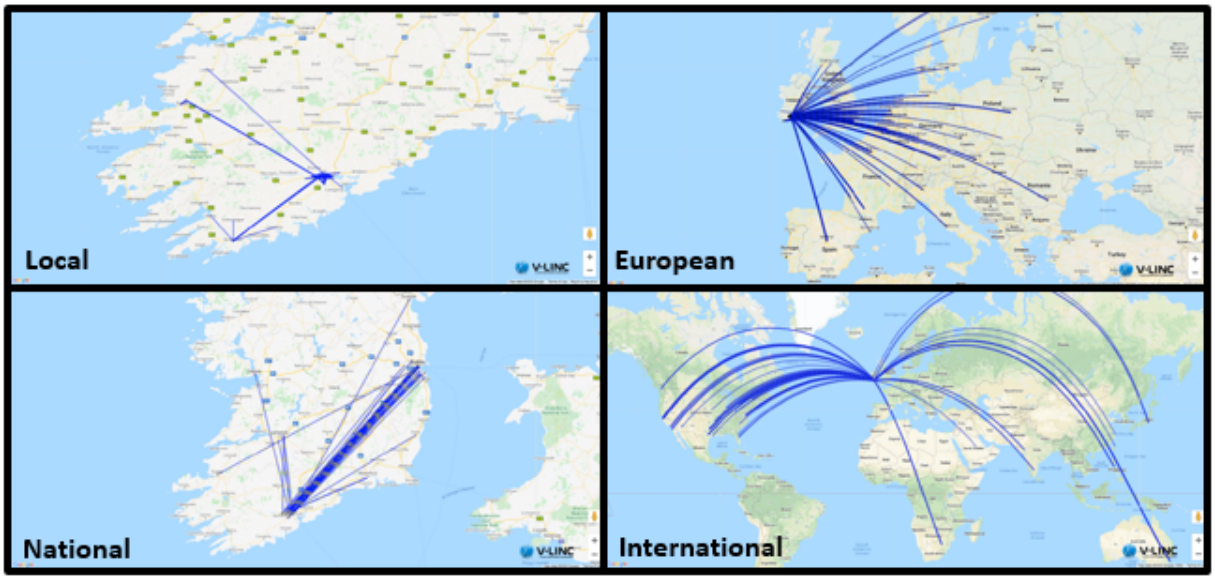


Figure 9: South West Cyber Linkages by Geographic Scope.

It is a positive to see that the cyber security RFG is most heavily connected locally in the areas of Industry Association (65%), Training (64%), Specialist Services (53%) and Research and Development (44%), suggesting that the local economy is benefiting through the provision of services. Nationally, it is not unusual to see the high proportions of linkages in the Government Agencies (52%) category as Ireland is centrally governed.

When looking at Figure 9, the Local linkage maps highlight the number of linkages in and around Cork City while the companies located in more rural settings in West Cork and Kerry have good connections back to the city. Nationally, there is a highway of connections between Cork and Dublin, with several linkages destined for Limerick and Galway also. The European linkages showcase the plethora of connections across Europe - the most populous geographic scope. We can see links across the UK and further afield into the Nordic countries, across Central Europe, into Eastern and Southern Europe. Furthermore, Figure 9 showcases pockets of the US which are heavily linked to Ireland's South West cyber security sector on the West, centrally and on the East coast. Further east, it is clear there are connections with India, China, Australia and South Africa showcase the truly international focus of the sector.

Business Impact Findings

Tables 4a to 4e show the percentage of linkages (by category) that fall into the business impact bands. The business impact of each linkage category relates to the business importance of individual linkages based on the perception of expert respondents involved with these linkages. Table 4a shows the combined business impact results for all linkages, while tables 4b - 4e, break the data into the individual geographic scopes.

In table 4a, it is apparent that the results of the V-LINC analysis indicate that Inputs (73%), Industry Peers (72%) and Outputs (63%) are rated of highest impact by respondents with the largest proportion of these linkages occurring in the 'High' business impact band. As a company's customers and suppliers are central to the success of the firm this is not surprising. In six out of the eight linkage categories, most linkages are in the top two business impact bands (e.g. High and Medium bands); overall 77% of all linkages reported were in these bands. Research and Development and Industry Association linkages are rated of least importance to the firms with 61% and 51% of linkages respectively in the Low and Tenuous categories.

Category		GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
Business Impact										
High	**>30 to 40**	29%	14%	73%	72%	63%	8%	22%	18%	152
Medium	**>20 to 30**	52%	35%	22%	12%	36%	46%	53%	47%	140
Low	**>10 to 20**	19%	47%	5%	8%	1%	53%	24%	33%	79
Tenuous	**>1 to 10**	0%	4%	0%	8%	0%	8%	0%	2%	8
Total		**31**	**49**	**37**	**25**	**111**	**36**	**45**	**45**	**379**

Table 4a: Business Impact by Linkage Category

It is also interesting to assess the business impact accorded to linkages at each geographic scope. Table 4b focuses on the business impact of 115 local linkages in the South West of Ireland. The most important linkages at the local level, i.e. most linkages reported in the High and Medium business impact bands, are Output (100%), Government Agencies (100%), Input

(80%) and Specialist Services (71%) linkages. It's important to qualify these results with the fact that 2% of Output linkages (n=2), 23% of Government Agencies (n=7), 14% of Input (n=5) and 53% of Specialist Services (n=24) are reported at local level. Most of the Training (64%), Specialist Service (53%) and Research and Development (44%) linkages are recorded with Local organisations but are not viewed as important to the RFG with over 40% of these linkages reported in the Low and Tenuous bands. Research and Development stands out with 75% of linkages in these bands.

Category		GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
Business Impact										
High	**>30 to 40**	0%	6%	20%	0%	50%	0%	13%	17%	12
Medium	**>20 to 30**	100%	44%	60%	0%	50%	25%	58%	42%	55
Low	**>10 to 20**	0%	44%	20%	0%	0%	56%	29%	38%	42
Tenuous	**>1 to 10**	0%	6%	0%	0%	0%	19%	0%	3%	6
Total		**7**	**32**	**5**	**0**	**2**	**16**	**24**	**29**	**115**

Table 4b: Business Impact by Linkage Category - Local Linkages

Table 4c presents the business impact data for 60 linkages that occur across the Republic of Ireland, 70% of which are in the top two business impact quartiles. In contrast to the Local linkages, no tenuous National linkages exist. Whilst a larger proportion of Industry Association linkages are reported in the Low business impact band.

Category		GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
Business Impact										
High	**>30 to 40**	25%	11%	50%	67%	50%	0%	30%	0%	15
Medium	**>20 to 30**	44%	22%	50%	0%	50%	60%	50%	71%	27
Low	**>10 to 20**	31%	67%	0%	33%	0%	40%	20%	29%	18
Tenuous	**>1 to 10**	0%	0%	0%	0%	0%	0%	0%	0%	0
Total		**16**	**9**	**6**	**3**	**4**	**5**	**10**	**7**	**60**

Table 4c: Business Impact by Linkage Category – National Linkages

The European linkages represent the most populous geographic scope. The business impact of the 120 linkages are displayed in Table 4d, 85% of which are reported to be of High or Medium business impact. Approximately 63% of all European linkages are reported across the value chain, e.g. Input, Output and Specialist Service linkages in the High and Medium bands. Research and Development linkages are reported to be the weakest linkage category at this geographic scope.

Category		GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
Business Impact										
High	**>30 to 40**	57%	50%	90%	64%	77%	9%	13%	0%	73
Medium	**>20 to 30**	29%	0%	0%	14%	23%	27%	63%	75%	29
Low	**>10 to 20**	14%	50%	10%	7%	0%	64%	25%	25%	16
Tenuous	**>1 to 10**	0%	0%	0%	14%	0%	0%	0%	0%	2
Total		**7**	**6**	**10**	**14**	**60**	**11**	**8**	**4**	**120**

Table 4d: Business Impact by Linkage Category - European Linkages

Table 4e reports business impact for the 84 International linkages, of which 96% are in the High and Medium bands. Approximately 74% of the International linkages are made up of the value chain - Input, Output and Specialist Service linkages in the High and Medium bands. Only Research and Development (25%), Training (20%) and Output (2%) report any linkages in the Low business impact band at the International level.

Category		GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
Business Impact										
High	**>30 to 40**	100%	50%	88%	88%	47%	50%	100%	60%	52
Medium	**>20 to 30**	0%	50%	13%	13%	51%	25%	0%	20%	29
Low	**>10 to 20**	0%	0%	0%	0%	2%	25%	0%	20%	3
Tenuous	**>1 to 10**	0%	0%	0%	0%	0%	0%	0%	0%	0
Total		**1**	**2**	**16**	**8**	**45**	**4**	**3**	**5**	**84**

Table 4e: Business Impact by Linkage Category – International Linkages

Table 5 reports the number and percentage of linkages reported in each of the business impact bands for each geographic scope, to compare the overall business impact of linkages at each geographic scope. Porter (2000) believes 'once a cluster forms, the whole group of industries becomes mutually supporting. Benefits flow forward, backward, and horizontally,' therefore, it is important to look closely at the business impact of Local linkages. Local linkages account for 115 of the 379 reported, showcasing that respondent firms engage in a 30% of their linkages across the South West. The second largest geographic scope after European (32%). However, only 10% (n=12) of which are reported as highly impactful. This is the lowest proportion of linkages reported in the High business impact band when compared with National (25%), European (61%) and International (62%) scopes.

For the cyber security sector in the South West, their main customers and suppliers are off the island of Ireland and they engage in a significant number of High and Medium valued European and International linkages. These of course are at further distances suggesting that these links are harder to form and maintain, but the market is global. European and International linkages are of most importance to the RFG.

Geographic Scope		Local	National	European	International	Total
Business Impact						
High	**>30 to 40**	10%	25%	61%	62%	152
Medium	**>20 to 30**	48%	45%	24%	35%	140
Low	**>10 to 20**	37%	30%	13%	4%	79
Tenuous	**>1 to 10**	5%	0%	2%	0%	8
Percentage		30%	16%	32%	22%	100%
Total (n)		115	60	120	84	379

Table 5: Business Impact by Geographic Scope of Linkages

Key Connectors

Figure 10 illustrates the key connectors in the South West Cyber Security sector in Ireland. The key connectors are those organisations who connect the cluster. They are identified through the number of linkages they have with respondent firms and the importance of those linkages to respondents is reported in Table 6.

In terms of the key connectors identified in the Cyber Security sector in the South West, there are strong linkages to Research and Education institutions, Industry Associations and Government Agencies. The standout linkages for the RFG are with IDA Ireland and Cork Institute of Technology as respondents report the majority of these connections in the High and Medium bands with 92% and 77% respectively.

Figure 10: Key Connectors in the South West of Ireland Cyber Security Sector.

Key Connector		CIT	UCC	IDA	it@cork	Cyber Ire	Cork Chamber
High	**>30 to 40**	15%	0%	17%	25%	0%	0%
Medium	**>20 to 30**	62%	38%	75%	25%	45%	27%
Low	**>10 to 20**	15%	54%	8%	50%	55%	64%
Tenuous	**>1 to 10**	8%	8%	0%	0%	0%	9%
Total (n)		13	13	12	12	11	11
Linkage Category		6 TN, 5 RD, 1 IN, 1 SS	7 TN, 5 RD, 1 SS	11 GA, 1OU	8 IN, 4 TN	11 IA	7 IA, 4 TN

Table 6: Business Impact of Key Connectors in the South West of Ireland Cyber Security Sector.

Cork Institute of Technology and University College Cork are the most connected entities to the RFG, their linkages to the cohort of firms extend across Research, Training, Specialist Service and Input linkages. As indicated in Table 4b the Research linkages of these key connectors aren't held in great regard by the RFG. Of the 10 research connections, 30% are in the Medium, 50% in the Low and 20% in the Tenuous band. It is evident IDA Ireland are strongly valued by the RFG and connected to the respondents. The three Industry Associations it@cork, Cyber Ireland and Cork Chamber are also heavily connected to the sector. it@cork and Cork Chamber provide skillsnet training programmes for their members, providing both an Industry Association and Training link with some respondents. As Cyber Ireland is the newest 'Industry Association' in existence it is positive to see them linked to all respondents as they build out their initiatives and offering for members.

POLICY RECOMMENDATIONS - SOUTH WEST CYBER SECURITY

Having reviewed Ireland's National Cyber Security Strategy 2019 – 2024 (Government of Ireland, 2019b) and Future Jobs 2019 (Government of Ireland, 2019a) with the results of the Cybersecurity V-LINC analysis, the following policies aim to enhance and develop the sector.

1. **Support and Strengthen collaborative R&D linkages with academia and industry, through i) a dedicated national cyber security research centre and ii) collaborative national funding programmes for R&D.**

There is a need to assist Cyber Security firms in Ireland, to innovate through increased R&D activity with academia/research institutions and B2B collaborations. It is evident that R&D linkages are one of the least populous linkage categories in the study (Table 4a) with just 36 linkages reported, surprising for a high-tech industry segment. Research linkages are a mixture of connections with academic institutions, research centres and private industry. Most R&D linkages (56%) occur at Local (Figure 9) and National levels (Table 3), however, most (67%) are deemed of Low and Tenuous importance (Table 3b and 3c). All but 2 of the 21 of these Local and National R&D linkages are with academic institutes and research centres, suggesting strong R&D connections are difficult to forge in Ireland. In contrast, 4 out of 11 R&D connections at a European level and 3 out of 4 International R&D connections are B2B – significantly all of these are reported in the High and Medium business impact bands.

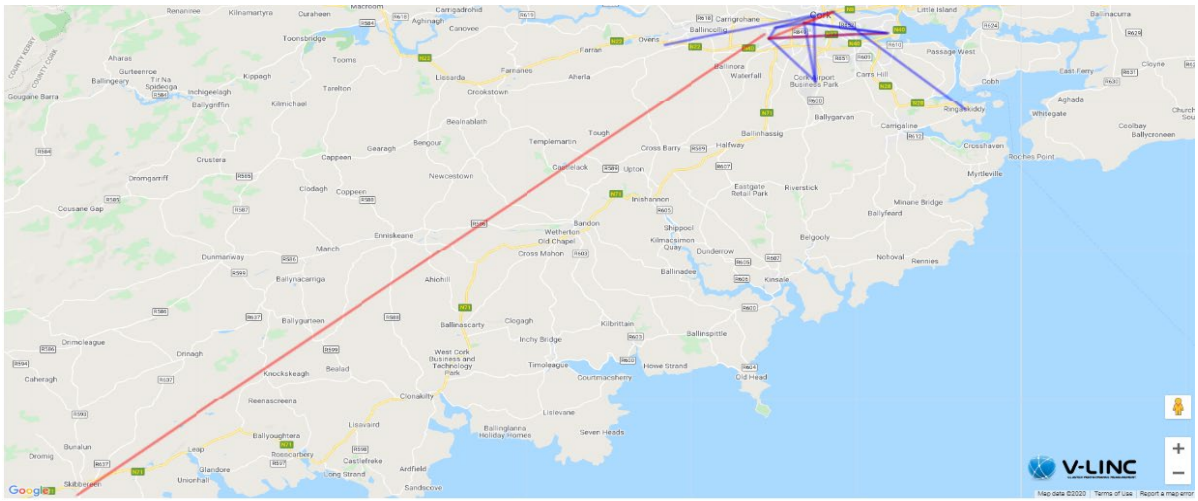


Figure 11: Local R&D linkages in the South West cyber security sector.[10]

An Industry Forum hosted in CIT in April 2017 attended by cyber security SMEs/MNCs and government agencies (IDA Ireland and Enterprise Ireland) reported low levels of collaborative cyber security R&D between industry. Furthermore, industry have found it difficult to engage with academia and feel this is limiting their growth and innovation. Cluster Initiation Workshops, organised in February 2019, gathered industry feedback to establish the strategy of the Cyber Ireland cluster. Here industry prioritised a National cyber security research centre & supports to facilitate collaborative R&D between industry/ academia.

It seems there is a two-pronged approach to supporting and strengthening collaborative R&D linkages with academia and B2B connections with industry:

i. Development of a dedicated national cyber security research centre

A national cyber security research centre is required to co-ordinate security-related research across the various research centres nationally, groups in SFI and academic research centres, to facilitate increased industry engagement with public R&D.

In Ireland there is significant competition between our Higher Education Institutes (HEIs), this limits co-operation as each institute wishes to compete on its own merits. Were national government to support the development of a dedicated national cyber security research centre, one way to incentivise the involvement of all HEIs is to provide postdoctoral and PhD funding for students to co-locate in the research centre, if their projects meet certain criteria and have industry involvement. HEIs would be linked to the national cyber security research centre through the supervision of their students and an academic co-working space could be made available also as part of the facility. Funding through SFI's Centres for Research Training programme would provide funding for the training of postgraduate students in areas of identified skills needs. However, students would need to be co-located and not dispersed to realise the benefits. This type of initiative would facilitate companies connections with academia at a central point and perhaps raise the business impact of the research.

[10] The Blue linkages are those in the Low and Tenuous bands, whilst those in Red are reported to be of High and Medium business impact.

ii. Developing a Collaborative R&D - B2B programme.

Developing funded co-operation projects between cyber focused firms, and with firms from other sectors, in Ireland can stimulate increased R&D linkages and innovation. In Ireland, industry is pre-disposed to the R&D supports that are provided through Enterprise Ireland and IDA Ireland, these are managed on a one to one basis – where each organisation applying receives funding to innovate with an individual HEI. Shifting the focus to work collaboratively with multiple industry (and even academic) partners may be transformative.

An example of a best practice European co-operation project programme is used in Business Upper Austria. Co-operation projects have been used by the region since 1998 and have proven to be an effective and efficient method for SMEs to strategically differentiate themselves (TMG, 2014). To be eligible for government funding, a minimum of three companies participate in the project and at least one of those should be an SME.

Results from Business Upper Austria show that: 77% of firms continue to co-operate after projects end; 89% of the projects either would not have been realised without subsidies or would have had significantly lower expectations. Firms discover that pooling competencies enables firms to overcome barriers, such as limited funding, lack of management resources and technological competencies. Such programmes train SMEs to undertake larger R&D projects at national and European levels.

An R&D co-operation project model, facilitated by the Cyber Ireland cluster organisation, may be the conduit needed for realising more B2B market focused connections and opening further connections internationally for the sector.

The aforementioned i) and ii) measures align with the National Cyber Security Strategy 2019 – 2024 (Government of Ireland, 2019) which identifies the need to support cyber security R&D activities under measures 14 and 16.

- Measure 14 of the national strategy – "Science Foundation Ireland, along with DBEI and DCCAE, will explore the feasibility through the SFI Research Centre Programme, the Research Centre Spoke programme or other enterprise partnership programmes, to fund a significant initiative in Cyber Security Research."
- Measure 16 of the national strategy – Enterprise Ireland will develop a cyber security programme to facilitate collaborative links between enterprise and the research community that leads to the practical application of research in business.

While both the National Cyber Security Strategy's R&D supports for academic research and industry focused R&D are much welcomed, there is no timeline for the implementation of these measures or financial commitment in the report. A clear timeline and financial commitment are needed to ensure that industry needs are met. Cyber Ireland has a critical role to play in supporting R&D in its role as a facilitator, matchmaker and voice of industry. It seems evident that Cyber Ireland could be a central partner in the development and implementation of a national cyber security research centre or R&D programmes to support industry-academic engagement.

2) Prioritisation of Training/Education supports to Address Cyber Security Skills Shortages

As Cyber Ireland was developed to address the critical skills shortage in cyber security, this is a priority issue for the RFG. At present, there is 0% unemployment reported in cyber security roles worldwide, with 3.5 million unfilled jobs predicted by 2021[11], resulting in increasing global competition for talent and investment. A global study[12] from ESG and ISSA confirmed "that the cyber security skills shortage is exacerbating the number of data breaches," with the top two contributing factors to security incidents being "a lack of adequate training of non-technical employees" (31%) and "a lack of adequate cyber security staff" (22%).

In Ireland, the biggest challenge to the growth and competitiveness of Ireland's cyber security sector is the immediate skills shortage, which is evident from increasing salaries, demand for cyber security graduates and international recruitment. Additionally, these shortages present a national security challenge, as companies, government departments and agencies, cannot recruit the skilled personnel to protect, respond, and mitigate against security threats and breaches. Ireland's National Cyber Security strategy spells out the urgency in addressing this critical skill shortage, and places emphasis on the need for a ready supply of talent to ensure that our data centres (which house a 30% of Europe's data), businesses and critical infrastructure, are protected. A number of initiatives aiming to address this shortage from courses/modules in HEIs, the Skillnets' Cyber Security Skills Initiative and the FIT Cyber Apprenticeship being piloted. However, these have not met the growing demand to date.

It is evident that Training is of critical importance to cyber security firms in the RFG, as the 3rd most numerous category. Respondents reported 45 connections of which 80% are in Ireland. It is important to assess the business impact of these links, 59% of Local (Figure 7) and 71% of National are deemed of High and Medium importance. Of further note is that none of the companies have links with ICT Skillnets or FIT who run the Cyber Apprenticeship programme.

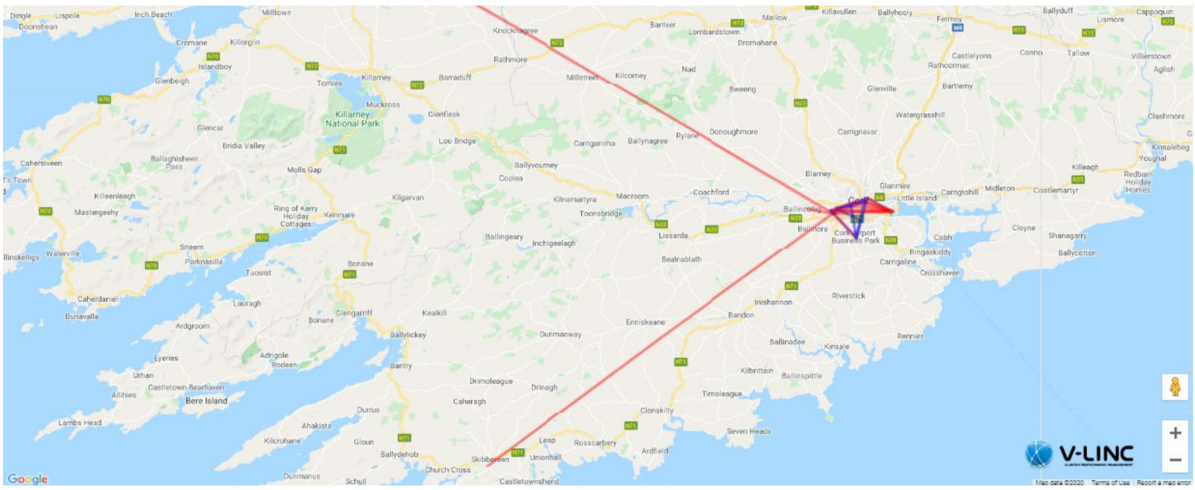


Figure 12: Local R&D and Training linkages in cyber security South West of Ireland.[13]

[11] https://cybersecurityventures.com/jobs/
[12] http://www.prweb.com/releases/2017/11/prweb14899778.htm
[13] The Blue linkages are those in the Low and Tenuous bands, whilst those in Red are reported to be of High and Medium business impact.

At the Industry Forum in April 2017, industry discussed the cyber security skills shortage and the need for deep, specialised and experienced talent as well as graduates that receive up-to-date education in the skills, technologies and competences of relevance to industry. This was built on at the Cyber Ireland Cluster Initiation Workshops in February 2019, where feedback via an industry survey found the top initiatives required by industry to address the skills shortage were to: (1) Outline current & future talent & skills needs of industry, (2) engage with HEIs to influence current and future course programmes to align with industry needs, and (3) promote cyber security careers and pathways to adults and children.

To address the cyber security skills shortage there is an urgent need for a co-ordinated approach from all key stakeholders across industry, academia, and government. Support and promotion for upskilling for technical staff working at the cold face of cyber security and for non-technical employees is essential. Cyber Ireland, as the national cluster organisation has a central role in understanding the needs of industry and working with the education and training providers to align courses and training to the needs of industry. Some suggested supports include:

a) Funding to conduct a national cyber security skills survey to determine where the current and future skills and skills gaps are across organisations, and in the Irish market, to understand the effects of the cyber skills shortages, the skill needs organisations are challenged to meet through training and recruitment, and identify diversity in the Cyber Security community.
b) HEIs that feed into the cyber security talent pipeline need to work together and break down the silos that currently exist both within and between academic institutions. This co-ordinated group of HEIs can work with industry, through Cyber Ireland, to align courses with industry needs.
c) The Skillnets 'Training Networks Programme' supports the activities of enterprise led Learning Networks across a wide range of industry sectors and geographical regions. As Cyber Ireland is the industry representative body for Cyber Security, it could apply to run its own Skillnet, in collaboration with the existing Cybersecurity Skills Initiative.
d) To ensure the next generation of cyber security professionals, Ireland needs to support the promotion of cyber security careers, and the pathways into those careers, to young people (11 – 18 years old). There are many programmes in other leading countries for cyber security training and promotion to children, such as CyberFirst in the UK where 12,000 girls took part in the programme in 2019. There is a similar need in Ireland for a national programme to promote cyber security careers, pathways and skills to young people. This could be developed and rolled out through Science Foundation Ireland's (SFI) Smart Futures Programme, with the support of industry and other key stakeholder groups.

Cyber Ireland can take the lead in promoting these initiatives to all stakeholders by becoming a critical part of the solution, with their membership of over 170 organisations (140 from industry, and all major HEIs in the Republic). The cluster has the opportunity to co-ordinate a national training, career promotion and job availability solution for the sector in Ireland.

A careers and training portal on the Cyber Ireland site could fill a void which currently exists in Ireland. An online dashboard composed of three integral elements 1) Cyber Course Finder, 2) Cyber Careers Showcase and 3) Cyber Vacancies would be an invaluable tool and resource which could pull together the most pertinent information from Cyber Ireland members across the triple helix to support the process of addressing the skills shortages for cyber professionals in Ireland. This portal would not be a short-term fix, but a longer-term strategic play to funnel more talent into the sector. A resource which could be used by secondary school students to see the types of careers on offer, life-long learning for employees and students who wish to study, upskill, or transfer from other disciplines, or for industry to promote the vacant roles.

3. Connect the Multinational and Indigenous players on the Island of Ireland.

As mentioned previously, the low numbers of Industry Peer linkages, the least numerous of the categories overall (Table 2 and 4b), indicate difficulties the RFG have in building trust-based collaborations with competitors, something Porter (1990, 1998b) highlights as essential in any cluster. This is further exasperated by the fact that the RFG report 88% of Industry Peer linkages at European and International levels, which shows less than a handful of connections across Ireland in this category. From a European and International perspective, these links are highly valued with 78% and 100% of these connections in the High and Medium impact bands. The question is why such links are not occurring in Ireland?

One particular programme Cyber Ireland could run as part of their services for industry could be 'Deal Broker' a programme which was originally run as part of the EU funded, Framework Programme 7, Be Wiser project - a collaboration between CIT and it@cork. The aim of the programme is to highlight a selection of Irish SMEs to large multinationals, and other indigenous firms in the region, to showcase the vibrant SME community that exists and foster relations between both parties. Large companies get the opportunity to hear the product offering from the SMEs in a unique environment and speak to them on a one-to-one basis to explore, and hopefully foster engagement. It is not a "pitching for investment" event, but rather an opportunity to meet and hear some new technologies that are being developed. Participants may wish to partner to develop collaborative business, research, mentoring, or feedback in the future.

After a 'tour de table' to introduce all participants in the room, so that organisations have an idea of who they would be pitching to, the indigenous SMEs are given 10 minutes to present to the MNCs and large indigenous firms in attendance. There is also an opportunity for MNCs and large firms to pitch their current challenges to see if the SMEs could meet their needs.

Strategies targeting clusters of regional specialisations can help address the fragmentation and unfocused investment that sometimes undermines the emergence of new marketable products and technologies. ICN (2014) suggests that a cluster organisation can have a significant influence on strengthening collaboration in a cluster, through the implementation of effective innovation policy. Regions across Europe that have been successful in supporting economic growth, competitiveness, and innovation through clusters have a national policy or framework of dedicated funding and supports e.g. Upper Austria (Clusters in Business Upper Austria), Catalonia (ACCIO), Flanders (Spearhead Clusters - Vlaio), Paris (Pôle de Compétitivité) and Piedmont (Innovation Poles) are noteworthy.

V-LINC ANALYSIS: TOURISM MÚSCRAÍ GAELTACHT

The Múscraí Gaeltacht is an area of c.455km^2 located 48km to the west of Cork city. The region is located on the Cork side of the border between Cork and Kerry and is quite a hilly region. The Derrynasaggart Mountains are located to the North west of the Gaeltacht with the tallest peak (Mullach an Ois) rising to 647m and the Shehy Mountains are located to the south of the Gaeltacht. The settlements in the region are located along the two river valleys of the Lee and Sullane. In between these valleys and hills, the landscape is quite diverse, including blanket bog, wet grassland, rough grassland and forestry. As such, the retention and preservation of nature within the region is important.

Currently, there are eight designated nature conservation sites in the Múscraí Gaeltacht. These sites consist of, three special areas of conservation (SACs), one special protection area (SPAs), and four natural heritage areas (NHAs). SACs are prime areas for nature conservation in Ireland and the European Union. The three located within Múscraí are St Gobnet's Wood, Mullaghanish Bog, and The Gearagh. The SPA is an area, which is designated for the conservation concern of bird in Ireland and the European Union. In Múscraí this region is identified as Mullaghanish to Musheramore Mountains. The NHAs, which are areas considered important from an Irish perspective, are Prohus Wood, Lough Allua, Gougane Barra Lake, and Ballagh Bog.

Whilst the above information outlines the cultural elements that exist within Múscraí, it is unclear how tourists can become immersed in these activities and who can facilitate the provision of information or services. As a result, this analysis aims to provide an overview of the current ecosystem that exists within the Múscraí Gaeltacht region. It will look at analysing several individuals and organisations that currently have the ability to provide services or products for high-end cultural tourists. The information and data analysed will provide a clear picture of the connections firms within the Múscraí Gaeltacht Tourism ecosystem had before the impact of the pandemic (2019 data), whilst also looking into the future beyond Covid-19 and where a potential recovery can occur (2022 data). Additionally, it also aims to recommend the steps that need to be taken in order to facilitate the creation of authentic cultural experiences aimed at the high-end cultural tourist.

The results of the V-LINC analysis are presented in the following section and reported by year, linkage category, geographic scope and business impact.

Table 7 lists the firms that participated in the V-LINC analysis - they are classified as the Respondent Firm Group (RFG). The ten firms interviewed, were a broad representation of tourism in Múscraí. They include a number of accommodation providers, tour operators, food and beverage providers, Irish dancing specialists and Irish language educators. The table outlines the percentage of linkages reported in each of the eight linkage categories. It shows that the largest number of linkages exist in the Output category which accounts for 29% of the linkages reported and is followed by the Input category with 22% of all linkages. Since, inputs and outputs are critical to the functioning of a firm it is not surprising that these categories have the highest frequency. In contrast, Research and Development (2%) and Training have the least amount of linkages. In terms of the R&D this could be due to R&D presently being conducted in house by the firms or regarding linkages with Industry Associations it may be as a result of a disjoint with providers of these services.

Company	SIZE	GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
9 White Deer	Micro (<10)	11%	6%	28%	11%	28%	0%	0%	17%	18
Colaiste Na Mumhan	Micro (<10)	11%	5%	26%	21%	21%	0%	16%	0%	19
Eiblin Ni Lionaird	Micro (<10)	25%	0%	0%	0%	75%	0%	0%	0%	8
Follain	Small (<50)	22%	0%	17%	13%	22%	9%	13%	4%	23
Gougane Barra Hotel	Small (<50)	5%	21%	23%	19%	21%	0%	12%	0%	43
Lee Valley Walking	Micro (<10)	12%	6%	18%	29%	18%	6%	6%	6%	17
Macroom Buffalo Cheese	Small (<50)	6%	18%	12%	12%	29%	0%	12%	12%	17
Mills Inn	Small (<50)	5%	10%	48%	0%	19%	5%	5%	10%	21
O'Tuama Tours	Micro (<10)	16%	3%	16%	19%	32%	0%	10%	3%	31
Scoil Rince Ui Thuama	Micro (<10)	11%	11%	32%	16%	21%	0%	5%	5%	19
RFG Average		12%	8%	22%	14%	29%	2%	8%	6%	22
Total (n)		24	20	50	33	55	4	19	11	216
Most Populous (Rank 1-8)		4th	5th	2nd	3rd	1st	8th	6th	7th	

Table 7: Distribution of 2019 Linkages by Category and Firm

Table 8 and Figure 8 outline the distribution of linkage categories for the firms analysed by geographic scope. The table shows that the most prevalent geographical linkages for firms within the Múscraí region are the links found within the Cork and Kerry regions but outside the Múscraí area. This would be expected, as many of the firms would conduct a lot of business within the larger towns and cities in Cork and Kerry. However, 24% of the linkages are at a national level which shows how the advances in modern technology and communication are helping firms in remote levels to connect nationally. In contrast, only 8% of linkages are on an international level and these are in the input, output, and R&D categories. Whilst it is a positive that 16% of overall output linkages are at an international level this also leaves scope for growth and development on an international scale.

Geographic Scope	Local	Cork/Kerry	National	International	Total (n)
Government Agencies	33%	54%	13%	0%	24
Industry Association	27%	18%	55%	0%	11
Industry Peers	10%	35%	55%	0%	20
Input	24%	50%	16%	10%	50
Output	20%	35%	29%	16%	55
Research & Development	30%	42%	18%	9%	33
Specialist Services	0%	89%	11%	0%	19
Training	0%	100%	0%	0%	4
Total (n)	**46**	**101**	**52**	**17**	216
Total (%)	**21%**	**47%**	**24%**	**8%**	

Table 8. Distribution of Linkage Categories by Geographic Scope

Interestingly, there are no specialist service linkages within the Múscraí region (Table 8), but 89% of firms use specialist services within the Cork/Kerry area. This could indicate that there are a lack of firms providing specialist services locally and further supports the suggestion that there is a lack quality professional jobs for well-educated individuals within the Gaeltacht region. In contrast, 33% of government linkages are on a local level. This is most likely down to the location of Údáras na Gaeltachta within the region and the support this organisation provides for the firms within the local economy.

Figure 8: Distribution of Linkage Categories by Geographic Scope

Tables 9a to 9e show the percentage of linkages (by category) that fall into the different business impact categories. As mentioned in the methods the business impact relates to the importance of each linkage as perceived by the firms' interviewee under the different linkage categories. Table 9a shows the combined business impact for all linkages before the data has been separated into Local, Cork/Kerry, National and International.

Category	GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
Business Impact									
Strong	42%	45%	86%	97%	73%	50%	63%	91%	158
Medium	38%	30%	10%	0%	20%	0%	26%	9%	37
Low	4%	15%	4%	0%	5%	0%	11%	0%	11
Very Low	17%	10%	0%	3%	2%	50%	0%	0%	10
Total	24	20	50	33	55	4	19	11	216

Table 9a: Business Impact by Linkage Category

From Table 9a, it is evident that Industry Peers (97%), Training (91%) and Inputs (86%) are rated of strongest impact. It is unclear why Industry Peers would have the strongest impact but perhaps it is essential for a positive connection to exist in order for firms to link with other firms within their industry. In terms of Training, the strong level may occur because of the trust that exists between the firm and the training provider. As suppliers are essential to the functioning of a business, it is not surprising that the firms rated 96% of their Input linkages in the strong or medium categories. Likewise, 93% of Output linkages were in the strong or medium category, and this is important as customers are key to the success of a firm.

Category	GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
Business Impact									
Strong	38%	50%	92%	90%	91%	0%	0%	100%	37
Medium	38%	50%	8%	0%	9%	0%	0%	0%	6
Low	0%	0%	0%	0%	0%	0%	0%	0%	0
Very Low	25%	0%	0%	10%	0%	0%	0%	0%	3
Total	**8**	**2**	**12**	**10**	**11**	**0**	**0**	**3**	**46**

Table 9b: Business Impact by Linkage Category - Local Linkages

Table 9b represents the business impact of linkages within the Múscraí Gaeltacht region, separated by linkage category, of which there are 46 linkages out of a total of 216. Interestingly, at local level, the level of business impact for Inputs and Outputs increases to 100% for the Strong and Medium levels of impact. This is also the case for Industry Associations and Training, indicating that firms place a significant value on relationships within the local region. In contrast, firms rated 25% of local Government Agencies linkages in the very low band, which shows a level of dissatisfaction or disconnect with these agencies.

Category	GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
Business Impact									
Strong	38%	71%	88%	100%	74%	50%	65%	100%	75
Medium	38%	0%	8%	0%	26%	0%	29%	0%	17
Low	8%	29%	4%	0%	0%	0%	6%	0%	5
Very Low	15%	0%	0%	0%	0%	50%	0%	0%	4
Total	**13**	**7**	**25**	**14**	**19**	**4**	**17**	**2**	**101**

Table 9c: Business Impact by Linkage Category – Regional Cork/Kerry Linkages

The business impact of linkages within the Cork and Kerry region are portrayed in Table 9c. From this table it is evident that almost half (101) the total number of linkages outlined by firms are within this region. This figure highlights the importance of regional linkages to the surveyed firms, especially since 75 of the 101 linkages are rated in the strong business impact band. Additionally, 87% of total government agency linkages are either at a local or Cork/Kerry level which outlines the need for a positive relationship with these agencies.

Category	GA	IA	IN	IP	OU	RD	SS	TN	Total(n)
Business Impact									
Strong	67%	27%	88%	100%	50%	0%	50%	83%	32
Medium	33%	45%	0%	0%	31%	0%	0%	17%	12
Low	0%	9%	13%	0%	13%	0%	50%	0%	5
Very Low	0%	18%	0%	0%	6%	0%	0%	0%	3
Total	**3**	**11**	**8**	**6**	**16**	**0**	**2**	**6**	**52**

Table 9d: Business Impact by Linkage Category - National Linkages

On a national scale the firms had a total of 52 linkages, 85% of which are report to be of high or medium business impact, as seen in Table 9d. Interestingly, only 50% of Outputs at a national level are seen to have a strong business impact which is much lower than the Output levels shown at other geographical scopes. In terms of Industry Associations, it is unusual to see 18% of links showing a very low business impact especially considering the indication many of the firms gave during the interviews, was that either the Industry Association was considered very supportive or the firm did not believe it was beneficial to be a member.

Category	GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
Business Impact									
Strong	0%	0%	60%	100%	89%	0%	0%	0%	14
Medium	0%	0%	40%	0%	0%	0%	0%	0%	2
Low	0%	0%	0%	0%	11%	0%	0%	0%	1
Very Low	0%	0%	0%	0%	0%	0%	0%	0%	0
Total	**0**	**0**	**5**	**3**	**9**	**0**	**0**	**0**	**17**

Table 9e: Business Impact by Linkage Category – International Linkages

It is apparent from Table 9e, that there are a limited number of International Linkages. The majority of those that do exist are considered to have a strong business impact and are mostly related to inputs or outputs of the firms. There are however there are some Industry Peer linkages, and these were related to connections made by a member of the surveyed firm in order to gather information or ideas about similar firms internationally. The small number of international links further reinforces the observation that there is a lot of space for development on an international should firms decide to set this as a target market.

The next section of results looks to the future to 2022 for the RFG, when Covid-19 restrictions will be eased, and international travel will hopefully be back to pre-covid levels due to the vaccine. It encapsulates the new customers the RFG wish to develop and type of supports or connections required across the other 7 categories to reach these customers by 2022.

2022 Tourism Múscraí Gaeltacht Results

In terms of the 2022 data, respondent firms were asked to outline the outputs/markets they were aiming to obtain by this point in time, hopefully beyond the pandemic. Additionally, the firms outlined the linkages required to obtain this target. Table 10 outlines the 2022 linkages distributed by category and geographic scope. This Table shows that 18% of the total linkages are International, which is a 10% increase on the 2019 figure. This indicates that firms will aim to target more international connections in order to aid them in obtaining their target market. In contrast Output levels have decreased from 20% to 6% at a local level, whilst quite low, the figure may indicate that firms believe that there is no longer potential for the expansion of their customer base within the Múscraí Gaeltacht region.

Geographic Scope	Local	National	European	International	Total (n)
Government Agencies	29%	54%	17%	0%	24
Industry Association	29%	43%	29%	0%	7
Industry Peers	75%	0%	25%	0%	8
Input	44%	11%	22%	22%	9
Output	6%	25%	33%	36%	36
Research & Development	0%	40%	20%	40%	10
Specialist Services	40%	60%	0%	0%	5
Training	0%	88%	12%	0%	8
Total (n)	**23**	**40**	**25**	**19**	**107**
Total (%)	**21%**	**37%**	**23%**	**18%**	

Table 10: Distribution of Linkage Categories by Geographic Scope 2022

Table 11a below describes the levels of business impact by linkage category for 2022. The Output category contains 34% of the overall number of number of linkages. This would be expected because in this part of the interview firms were focused on their target markets. However, it is interesting that the second highest level of total linkages is Government Agencies (22%) which indicates that firms believe the connections and support of these agencies is vital to the firm achieving its targets. Additionally, 71% of the total number of linkages are in the strong business impact band, suggesting that these connections are essential to the future direction of the firms.

Category	GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
Business Impact									
Strong	46%	71%	78%	75%	69%	40%	100%	100%	71
Medium	38%	29%	22%	25%	31%	60%	0%	0%	32
Low	13%	0%	0%	0%	0%	0%	0%	0%	3
Very Low	4%	0%	0%	0%	0%	0%	0%	0%	1
Total	**24**	**7**	**9**	**8**	**36**	**10**	**5**	**8**	**107**

Table 11a: Business Impact by Linkage Category 2022

When the business impact figures are sub-divided into geographic scope, as seen in Tables 11a to 11e, it becomes clearer as to where the firms intend to obtain more custom in the future. At a local level (Table 11b), all of the linkages are in the strong or medium business impact bands, showing their importance to the firms. Whilst the business impact of all Outputs is in the strong category, there are very low total levels of Output, comprising just 9% of the total number of local linkages. In contrast, of the total number of local linkages, Government Agencies account for 30%. This indicates that whilst firms may be targeting customers at a different geographical scope, they require the support of local government to achieve this.

Category	**GA**	**IA**	**IN**	**IP**	**OU**	**RD**	**SS**	**TN**	**Total (n)**
Business Impact									
Strong	43%	50%	75%	83%	100%	0%	100%	0%	16
Medium	57%	50%	25%	17%	0%	0%	0%	0%	7
Low	0%	0%	0%	0%	0%	0%	0%	0%	0
Very Low	0%	0%	0%	0%	0%	0%	0%	0%	0
Total	**7**	**2**	**4**	**6**	**2**	**0**	**2**	**0**	**23**

Table 11b: Business Impact by Linkage Category 2022 - Local Linkages

In contrast to the local level figures, business impact for government agencies at a Cork/Kerry level are spread across the different bands with 31% of linkages occurring in either the low or very low band, as seen in Table 11c. This suggests that whilst these relationships are necessary for development, the firms do not currently consider them to have a long-term positive potential. The business impact of all other linkages is in the strong or medium category, however, in comparison to the 2019 figures, the percentage of overall number of linkages has reduced from 47% to 37%. This shows a change in future focus away from the more regional scope to other geographic scopes.

Category	**GA**	**IA**	**IN**	**IP**	**OU**	**RD**	**SS**	**TN**	**Total (n)**
Business Impact									
Strong	31%	67%	100%	0%	78%	0%	100%	100%	24
Medium	38%	33%	0%	0%	22%	100%	0%	0%	12
Low	23%	0%	0%	0%	0%	0%	0%	0%	3
Very Low	8%	0%	0%	0%	0%	0%	0%	0%	1
Total	**13**	**3**	**1**	**0**	**9**	**4**	**3**	**7**	**40**

Table 11c: Business Impact by Linkage Category 2022 – Cork/Kerry Linkages

In contrast to the 2019 figures, on a national level in 2022 all linkages were in the strong (84%) or medium (16%) business impact bands, as shown in Table 11d. However, the number of linkages with government agencies increased from the 2019 figure and were 100% in the strong business impact band. As was the case with the local linkages, this underlines the importance firms are placing on support needed from government agencies.

Category	GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
Business Impact									
Strong	100%	100%	50%	50%	83%	100%	0%	100%	21
Medium	0%	0%	50%	50%	17%	0%	0%	0%	4
Low	0%	0%	0%	0%	0%	0%	0%	0%	0
Very Low	0%	0%	0%	0%	0%	0%	0%	0%	0
Total	**4**	**2**	**2**	**2**	**12**	**2**	**0**	**1**	**25**

Table 11d: Business Impact by Linkage Category 2022 - National Linkages

Table 11e outlines the importance level of international linkages separated by linkage category. In terms of the international linkages, all linkages are in the strong or medium business impact band and they occur across three different categories: Input (22%), Output (36%) and R&D (40%). The level of Outputs would be expected especially for some of the firms who have already obtained a national market. However, it is interesting that firms realise that conducting R&D on an international scale may help them to gain access to international markets.

Category	GA	IA	IN	IP	OU	RD	SS	TN	Total (n)
Business Impact									
Strong	0%	0%	100%	0%	46%	50%	0%	0%	10
Medium	0%	0%	0%	0%	54%	50%	0%	0%	9
Low	0%	0%	0%	0%	0%	0%	0%	0%	0
Very Low	0%	0%	0%	0%	0%	0%	0%	0%	0
Total	**0**	**0**	**2**	**0**	**13**	**4**	**0**	**0**	**19**

Table 11e: Business Impact by Linkage Category 2022 – International Linkages

The next section interprets the results and provides recommendations for the Múscraí Gaeltacht Ecosystem Report.

The information and data reported above provide a clear picture of not only where the Múscraí Gaeltacht Tourism ecosystem and its current connections sit but also where the firms are looking to target into the future beyond Covid-19. As with all firms, the focus is on the Outputs of the business and how these can be developed, solidified and maintained. The results showed that firms were looking to increase its customer base on a Cork/Kerry, National and International basis (Table 4). However, in order to do this via increased levels of tourism a number of key actions need to be taken by the firms within the Múscraí Gaeltacht.

1. Micro-Cluster Development – Key Integration of Tourism Bodies and Local Authorities

Firstly, a lack of collaboration is occurring between actors within the region, especially on a formal basis. This is not helped by the divide that exists between the different villages in the Múscraí region. Firms pass on and recommend local businesses on an ad-hoc basis when asked by customers. However, there is no structure to this, or trust built in the community between segments of local business, which ultimately local businesses are losing potential revenue, whilst it is difficult for customers to organise or be aware of cultural experience that could be available to them within the region. Both parties are hence losing out at present.

In the V-LINC interviews, numerous firms identified a lack of information sharing across the region as a significant challenge to tourism. In order to combat this, it is recommended that a 'town hall' meeting is organised to join all industry members together, with a focus on collaboration and what can be achieved. It is essential to identify a firm or individual willing to lead this collaboration, or what might be accurately described as a micro-cluster – this person has the potential to be the linchpin for the collaborating firms and hold the key to driving a larger market for cultural experience tourism within the Gaeltacht.

It is also important to include other stakeholders such as government agencies and relevant local associations in this meeting. In terms of the government agencies (GA), the importance of these linkages was outlined in 2022 results where GA accounted for 22% of the total number of linkages (Table 10). Firms identified that they needed support from GA not only on a local level but also the support of national GA in order to gain access to international markets. The most commonly occurring government linkage was with Údaras na Gaeltachta followed by other agencies such as Cork County Council and Fáilte Ireland. Therefore, it is important that representatives from these organisations also be present at the meeting so as to be informed of the services available within the region and its potential for development.

2. Digital Marketing Platform for the Micro-Cluster Experiences/Offerings

Once experiences have been developed, it is essential that there is a co-ordinated approach to marketing. Whilst in 2019, training only made up 2% of the total number of linkages this figure increased to 7% by 2022 and the most type of training required by firms was in relation to digital marketing. Whilst it is unclear if this form of training is available at a local level, firms would be able to link with organisations such as the Cork Institute of Technology who could enable firms (or the micro-cluster) to participate in marketing case studies where students will develop a marketing strategy for the developed cultural experience.

Furthermore, one of the objectives of the Interreg Atlantic Area – Atlantic Culture Scape project of which the stakeholders interviewed are participating in, is to create an International marketing strategy for cultural experiences across the Atlantic Area. This strategy will potentially enable the Múscraí Gaeltacht to gain access to international tourists and to become part of a marketing strategy on an international scale. Furthermore, with international linkages comprising of only 8% of the total linkages in 2019 (Table 8), international tourists are a significant focus market which needs to be targeted by the region.

3. Skills Development – Deepen the Supply of Qualified Tour Guides

Finally, in order for tourism to develop in the region a certain number of qualified tour guides with regional expertise are required to ensure a similar standard of experience is provided across the Atlantic Area. From the research conducted to date, there has only been one tour guide (as recognised by the tour guides association of Ireland) identified within the region. Supports for this type of activity will need to be established so as to enable the development of tourism.

CONCLUSIONS – GOALS FOR POLICY LEARNING

In order to support the South West region in limiting the negative impacts of the Covid-19 pandemic, the V-LINC analysis of the South West Cyber Security sector and Tourism in Múscraí Gaeltacht have identified a number of policy recommendations to support these companies and the region to become more resilient.

For the Cyber Security Sector:

1. Support and Strengthen collaborative R&D linkages with academia and industry, through i) a dedicated national cyber security research centre and ii) collaborative national funding programmes for R&D.
2. Prioritisation of Training/Education supports to Address Cyber Security Skills Shortages
3. Connect the Multinational and Indigenous players on the Island of Ireland.

For the Tourism Sector in Múscraí Gaeltacht:

1. Micro-Cluster Development – Key Integration of Tourism Bodies and Local Authorities
2. Digital Marketing Platform for the Micro-Cluster Experiences/Offerings
3. Skills Development - Deepen the Supply of Qualified Tour Guides

In the South West region, we are keen to learn from initiatives and supports which may be already operating in partner regions to support the objectives above.

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