August 2021

Southern Regional Assembly's Submission on the National Smart Specialisation Strategy

Contents

1. Introduction

The Southern Regional Assembly (SRA) welcomes the opportunity to participate in the consultation by the Department of Enterprise Trade and Employment (DETE) to inform the development of a Smart Specialisation Strategy (S3) for Ireland with a regional focus.
The consultation paper states the strategy will complement the work of the Regional Assemblies in implementation of the Regional Spatial and Economic Strategies (RSES) for the Southern, Eastern and Midland and Northern and Western Regions. It will seek to progress S3 in the regions which is a key economic principle under the RSES, supporting place-based enterprise ecosystems and supporting the regions to fully realise their competitive advantages and growth opportunities, reducing economic disparities within and between the regions.

By applying a regional dimension to Ireland's S3, central government can invest in regional investment priorities more effectively, underpin regional competitive advantages and leverage the unique role of the Regional Assemblies have in connecting EU, national and local stakeholders through the regional tier in our management and coordination of RSES and MASP Implementation and as the managing authority for the ERDF ROP 2021-2027.

A successful S3 requires regions to have a comprehensive understanding of their regional institutional contexts to identify their strongest research, innovation and entrepreneurial assets so that they can select a limited number of priorities where they can build critical mass in areas of comparative advantage[1]. As such, the SRA welcome this outcome and commitment to alignment with the work of the regional tier in the Southern Region (SR) for RSES implementation and managing the next European Regional Development Fund (ERDF) Regional Operational Programme (ROP) 2021-2027.

This consultation process is a timely and an important opportunity for the SRA to reiterate to central government that:

- Strong Government Department support to the regions is transformative in driving sustainable growth, economic prosperity and regional parity, the goal of national policy under Project Ireland 2040: NPF, RSES and stated goals for new Smart Specialisation Strategy for Ireland.
- The regional tier, in terms of geography, structure, coordination with stakeholders and experience in delivering EU and national policy at the regional scale, is strongly placed to facilitate and action the work of central government in achieving its goals under a new S3 strategy, especially as a strategic bridge for S3 between national and NUTS II regional level, in complement to the role of NUTS III level Regional Enterprise Plans which will further support S3 with regional and local stakeholder inclusion.
- A regional approach to the S3 strategy tailored to regionally informed strengths, competitive advantages, emerging opportunities and issues to address in support of enterprise, research, development and innovation (RD& I) growth needs to be articulated and committed to within the S3 strategy for Ireland.
- Alignment of regional S3 objectives and actions with RSES Regional Policy Objectives (RPOs) which have shared themes (as outlined throughout this submission) and stakeholder interests and leveraging the strategic role of the Assemblies for EU and national policy delivery at the regional level, is welcomed and needs firm commitment within the final S3 strategy.

[1] Morisson, A. & Pattinson, M. (2020). Smart Specialisation Strategy (S3). Lille: Interreg Europe Policy Learning Platform

2. Regional Context

2.1. Socio-Economic profile of the Southern Region

Ireland is rated as one of the most open economies in the EU and has received significant FDI due to its competitive corporate tax rate, geography, high education attainment levels, EU membership, and favourable living environment. The SR has benefited greatly from FDI with several technology and life science multinational companies (MNCs) having a presence in the region.

Regional profiling and benchmarking with other European regions that share similar structural conditions to the SR reveal that although the region has the highest GDP per capita nationally, it also has the **lowest real growth rate of regional Gross Value Added (GVA)**. This can be attributed in part to the presence of MNCs, making **the region vulnerable to potential corporate tax reforms** indicating the **need for more support towards indigenous growth.**

Benchmarking comparisons indicate the SR ranks first in terms of specialisation in high-tech and knowledge-intensive sectors, but the region faces significant challenges in terms of recent rises in unemployment as a result of the pandemic. In response to these major economic challenges, such as COVID-19 and Brexit, there is a need for the region to drive structural transformation and enhance local capabilities to make the region's economy fit for the future and ensure long-term inclusive prosperity.

Classified as a 'more developed region' according to the EU cohesion policy, the SR ranks 22nd out of all European regions in terms of regional GDP and 2nd at the national level, with a GDP of €147.2b that accounts for 41.3% of Ireland's GDP (Eurostat, 2019). The region has also the highest GDP per capita nationally, which was estimated at €88.5k in 2019 (CSO, 2020). However, it is important to note that GDP figures are mainly due to MNC influence, the real growth rate of regional GVA was the lowest, at 4.3% in the same year (Eurostat, 2020). The regional economy relies heavily on a range of multinational companies that specialise in areas such as:

- Bioeconomy and biomaterials
- Electronics and medical technology
- Pharmaceuticals
- Green technology

Despite its strong economic performance, the SR faces significant challenges in terms of unemployment. Since 2012, the regional unemployment rate has steadily decreased thanks to the economic recovery, reaching 5.5% in 2019 (Eurostat, 2021). However, following the pandemic, the unemployment rate soared to 6.4% by the end of 2020 (CSO, 2021). The region still records the highest rate in the country, remaining above the national average (5.7%), but below the EU level (7.3%). Considering the NUTS III sub-regions, the South-East had the highest unemployment rate nationally (6.6%) on average over 2020, followed by Mid-West (6.1%), however, the South-West registers the second-lowest rate (5.1%) in the country (CSO, 2019). On the other hand, the region's employment rate showed a steady increase % between 2015 and 2019, growing from 64.1% to 67.4 (Eurostat, 2020); however, the employment rate dropped to 59.4% by the end of 2020, scoring below the national average (61.1%) (CSO, 2021). Overall, the impact of COVID on the Southern Region's labour market can be evidenced by the 55,989 people on the Live Register and the 91,311 people in receipt of the PUP registered by the end of May 2021 – both figures being the second highest among the three

Irish regions (CSO, 2021); however, these numbers reduced considerably compared to end of January 2021, by -10% and -40% respectively.

The presence of several universities, institutes of technology, research centres -both private and public, and a technological university help drive and support the innovation potential of the region. It represents an attractive area for investment due to the important role played by the IT industry. The region's strong focus on education and access to multiple research centres has fuelled the staffing and skill requirements of multinationals, making it a hotbed for Life Science, Technology, Multilingual and Engineering graduates. The population with tertiary education attainment registered 45.6% in 2020 (Eurostat, 2021), the lowest of all regions. Moreover, the participation rate in education and training (a.k.a. lifelong learning) was 9.7% in 2020, slightly above the EU27 average (9.2%) but below the national average (11%) (Eurostat, 2021)

Overall, the region's economy, as well as the Irish economy, has performed positively in recent years and is expected to continue to expand, albeit at a more stable pace. However, Covid-19 will have an impact on the Irish economy comparable to that of the EU. The EC's Spring 2020 projections foresee a decline of 7.9% during 2020 and an increase of 6.1% in 2021. Forecasts for the EU on average are similar, with a decline of 7.4% in 2020 followed by an increase of 6.1% in 2021. Nevertheless, although somewhat positive, the economic prospects of the regions remain cloud-ed with uncertainty due to the still unclear situation that will follow Brexit.

Between 2011 and 2019, the Southern Region ranked as a Strong Innovator (+), according to the Regional Innovation Scoreboard, with an increasing innovation performance over time (+3.3%) relative to that in 2011. Although the region was able to raise its Innovation Index above the national performance since 2011 (from 99.9% to 103%), its position relative to the EU average weakened (from 113.3% to 111.3%), though remained above average.

The regional performance shows relative strength for several innovation indicators, such as marketing/organisational innovation and R&D expenditures in the public sector. For the latter, the score is above the national average (149%) and equal to the EU average (100%). Weak performance is instead registered for design applications, for which the region performs significantly below both the national and EU average (51% and 28%, respectively).

2.2. Role and Function of the Southern Regional Assembly (SRA)

The SRA represents the regional tier of governance with a statutory role in the coordination and oversight of Local Authorities. The functions of the SRA are primarily focused on:

- **The formulation, adoption, and implementation of its Regional Spatial and Economic Strategy (RSES) and Metropolitan Area Strategic Plans (MASPs);** Following publication of the RSES and MASPs in January 2020, the SRA are currently progressing action focused implementation in collaboration with cross sectoral stakeholders. Our initiatives are project managed jointly across the regional planning division and EU projects division, integrating EU good practice, shared knowledge, and funding to develop frameworks, toolkits and pilots under a number of key themes. Examples of this successful partnership includes Interreg Europe (IE) Cohes3ion developing frameworks for 'A Regional Approach to S3' and 'Smart Cities driving a Smart Region', IE MARIE focused on the promotion of Responsible Innovation in regional S3 and innovation strategies, IE MATCH-UP implementing the 10 Minute City and

Town Framework and IE Blue Green Cities developing frameworks for implementing Green and Blue Infrastructure and Nature Based Design Solutions in our Region.

- **Oversight and coordination of Local Economic and Community Plans**;
- **Management of European Regional Development Fund co-financed programmes**, including the 2021-2027 programme for the Southern and Eastern & Midland Regions which the SRA fulfils the role of Managing Authority ; the SRA provides an important leadership role in coordinating between EU, national, regional and local stakeholders in pursuit of Regional Policy Objectives (RPOs) to deliver on the transformative growth and vision of Project Ireland 2040: The NPF and the RSES, using our knowledge and experience in regional planning, managing ERDF funding and active participation in EU projects. The new S3 Strategy is an opportunity to align effectively with RSES implementation. Such alignment will be of key relevance for EU cohesion funding in Ireland for the period 2021-2027 and the development of priorities under the ERDF 2021-2027 Programme for the Southern and Eastern & Midland Regions. The priorities for the next programme will focus on smart cities and a smart region, lower carbon emissions, climate resilience and urban regeneration, all cross-cutting themes of the S3.
- **EU project participation**, supporting and promoting public sector participation in EU funded projects across a range of Programmes.
- **Implementation of national economic policy**;
- additional functions through working with the **National Oversight and Audit Commission**. The Assemblies coordinate closely with each other and with cross sectoral stakeholders on investment priorities for these themes over 2021-2027 which are directly relevant to building economic resilience, innovation and economic transformation in the Regions as sought through the new S3 strategy and RSES implementation.

The SRA provides an important leadership role in coordinating between EU, national, regional and local stakeholders in pursuit of Regional Policy Objectives (RPOs) to deliver on the transformative growth and vision of Project Ireland 2040: The NPF and the RSES, using our knowledge and experience in regional planning and EU projects.

The SRA welcome the commitment within the consultation paper that Regional Assemblies are key stakeholders in the S3 process, playing an integral role in the development of this strategy. The SRA look forward to working with DETE on the implementation and oversight of the S3.

2.3. The Regional, Spatial and Economic Strategy (RSES) of the Southern Region

The SRA welcomes the recognition given in the consultation paper to the RSES and identification of S3 as a key economic principle of the RSES. The SRA agree that realising the enterprise and innovation potential specific to each of the NUTS II regions, and reducing disparities between the regions, must be a key objective of Ireland's new Smart Specialisation Strategy.

This goal of regional parity is also key to NPF and RSES implementation and needs to be supported by the actions of central government. Developing S3 in the regions and NPF/RSES implementation are therefore interdependent.

The SRA published its RSES for the SR and MASPs for Cork, Limerick-Shannon, and Waterford, bringing together spatial planning and economic policy while providing a strategic framework for investment in the SR, marking a significant policy milestone for not only regional government in Ireland, but also national and local government. It provides a **statutory long-term, strategic development framework**

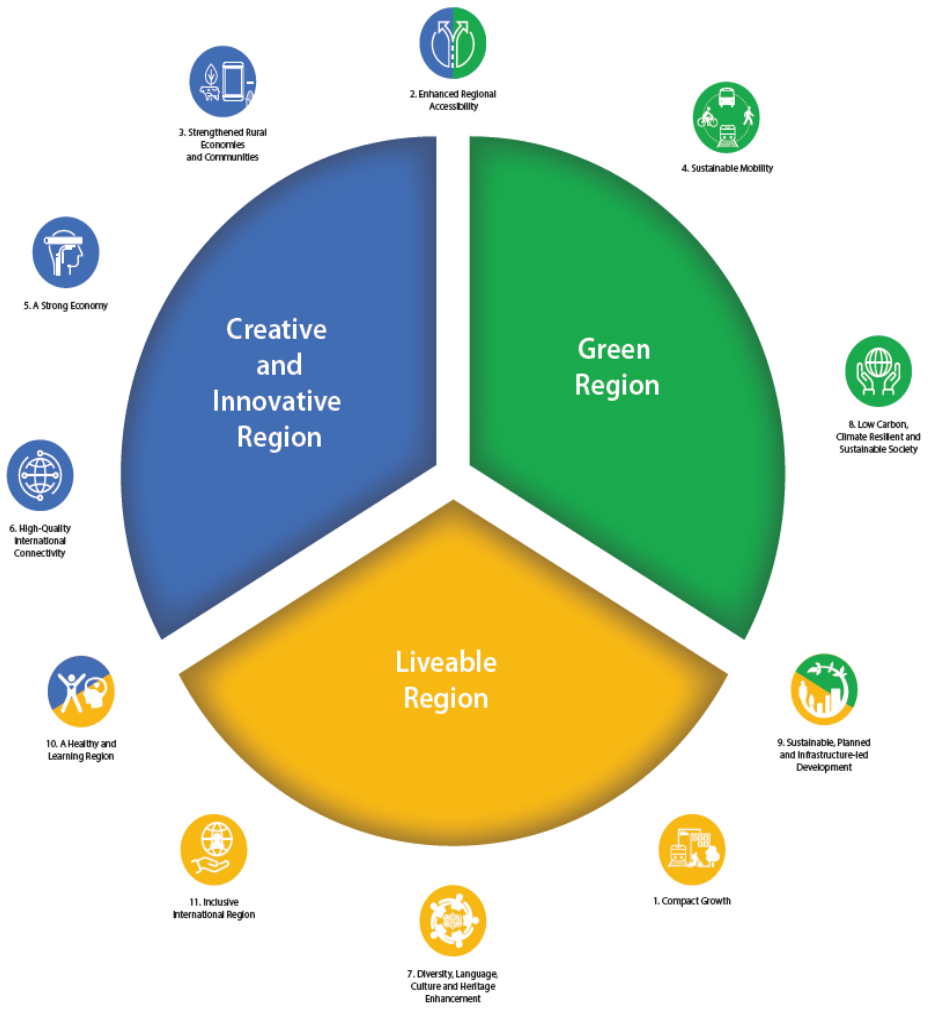
for the spatial, economic and social development of the Region, in line with vision and objectives for transformative change in the National Planning Framework (NPF) and the National Development Plan (NDP).

In line with the NPF and NDP, the RSES sets a 12-year statutory strategic planning and economic development framework for future economic, spatial, and social development of the SR to become one of Europe's most "**Creative and Innovative**", "**Liveable**" and "**Greenest**" Regions.

The SR has the State's most significant proposition to achieve the aim of Regional Parity. The NPF and RSES targets our three cities to grow by over 50% to 2040 as part of a structural realignment in population, homes, and jobs away from the Greater Dublin Area with a 50:50 distribution of growth between the Eastern and Midlands region and the Southern and Northern and Western Regions.

By 2040, the population of the Region is projected to rise to almost two million and grow employment by 225,000 (880,000 in total) emphasising the importance of an effective S3 at regional level.

Figure 1: 11 Strategy Statements form the core of the RSES Strategy and are summarised in the Diagram below



2.4. Key Principles of the Spatial Strategy – Place Based Economic Drivers

The RSES sets the appropriate planning and economic framework and hierarchy for national investment into the Region to achieve growth targets. The essence of the approach is best captured through RPO 2 "Planning for Diverse Areas". The overall strategy builds on cities and their associated metropolitan areas as engines of growth and seeks, in parallel, to re-position the Region's strong network of towns, villages and diverse rural areas in an economically resilient way.

The settlement strategy for the SR builds on our three cities and metropolitan areas of Cork, Limerick -Shannon and Waterford as engines of growth supported by a network of 14 strategically located Key Towns namely Kilkenny, Ennis, Carlow, Tralee, Wexford, Clonmel, Killarney, Mallow, Nenagh, Thurles, Newcastle West, Clonakilty, Dungarvan and Gorey.

The RSES outlines a set of guiding principles for growth under RSES Section 3.3. A Tailored Approach, including the track record of performance, ambition, and scope to leverage investment, scale of employment provision, jobs to resident workers ratios and net commuter flows, infrastructure capacity, accessibility and influence in a regional and sub-regional context.

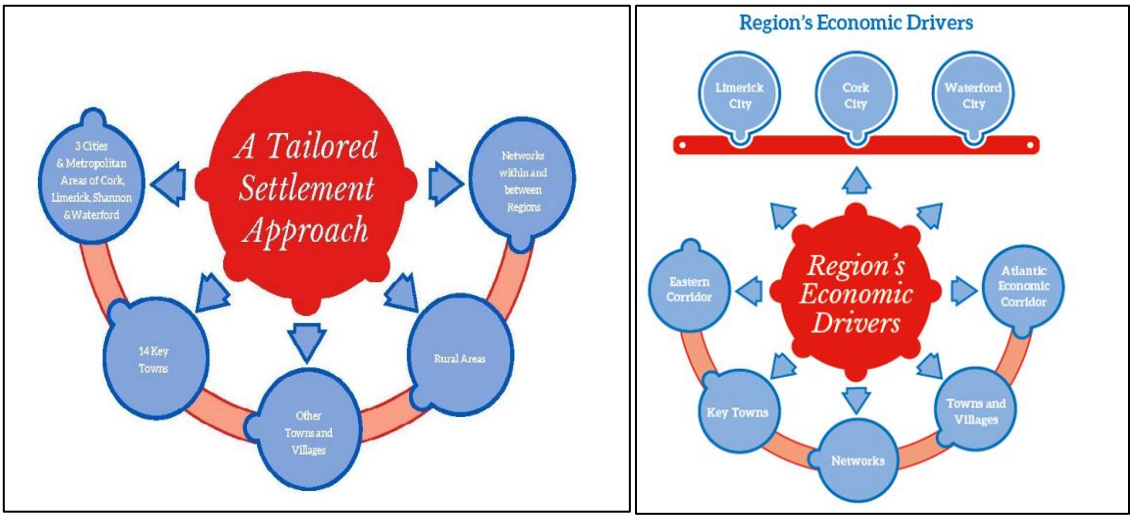
More specifically RPO 3 and RPO 26 refer to the need to 'identify settlements which can play a role at a sub-regional level to drive the development of their areas'. The RSES identifies the economic role played by smaller scaled settlements for their surrounding rural hinterlands and the opportunities for collaboration, sharing assets and opportunities (see RPOs 28-30) between different settlements to drive rural economic growth.

An example of networks with huge potential for sharing infrastructure and economic assets, project collaborations and fostering enterprise and RD& I growth include the Kerry Hub and Knowledge Triangle, the Galway- Ennis- Shannon, Limerick Economic Network, the North Cork Agri Food Network, the West Cork Marine Network, the Limerick-Waterford Transport and Economic Axis and the Waterford -Kilkenny-Carlow-Dublin network.

The RSES strongly supports the development of our rural areas, and Chapter 3 recognises the decline of population and services in many villages and rural areas as a problem of strategic national and regional importance and acknowledges the need for investment in towns and villages to reverse decline and attract population and enterprise growth.

Figure 2 reflects the complementarity between the RSES settlement strategy and the Region's economic drivers.

Figure 2: RSES Settlement Strategy and Drivers for Economic Growth Align



2.5. Key Principles of the Economic Strategy

The economic strategy of the SRA's RSES aims to develop a sustainable, competitive, inclusive and resilient regional economy. Key to delivering our overarching vision is ensuring the region develops a strong and diverse economic base. With immediate challenges such as COVID-19, Brexit, and potential vulnerabilities for Ireland's enterprise base, it is important that the SR sustains what we have in the immediate term, transforms our enterprise base for longer term resilience while managing potential vulnerabilities. The RSES seeks to achieve this vision through five economic principles:

1. **Smart Specialisation**: Bringing together key stakeholders with real local knowledge in a geographic area to identify the competitive advantages and develop new economic opportunities.
2. **Clustering**: Putting in place a favourable and connected regional business ecosystem in which new players can emerge and support new value chains and emerging new industries.
3. **Placemaking**: A significant emphasis on making attractive places to live, learn and work to attract talent.
4. **Knowledge Diffusion**: A Learning Region, developing skills, talent, research and development, education assets and access to life-long learning.
5. **Capacity Building**: The capacity to bid for funding and to respond to emerging challenges to secure greater economic resilience is supported.

Opportunities for economic growth across the SR will be achieved by supporting synergies between talent and place, building on identified assets and potential opportunities to strengthen and transform enterprise ecosystems and provide quality jobs, re-intensifying employment in existing urban areas, complemented by strategic employment growth in the right locations and diversifying local and rural economies.

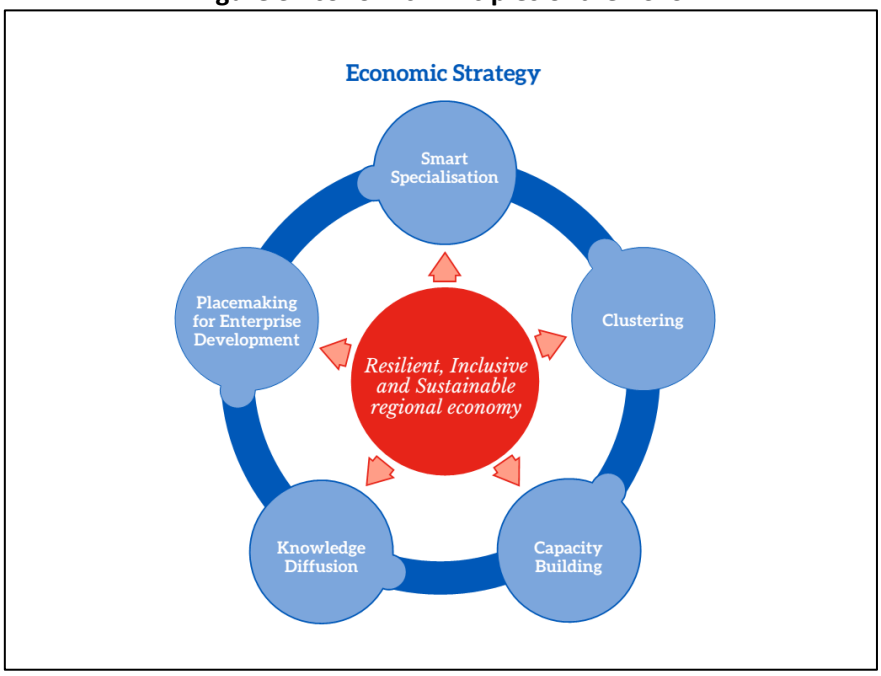
As the RSES marries spatial planning and economics, there is a strong emphasis on placemaking for enterprise development i.e., creating attractive places to attract skills and talent. **The emphasis on placemaking for enterprise growth is supported through Health Place Audits (RPO 61)** to create attractive, enterprise development friendly, high-quality places that are home to a diverse

enterprise mix. To implement placemaking initiatives, bidding capacity is required to bid for and win competitive funds. Developing this capacity is essential to access competitive funds available

The SR's ability to develop, nurture, retain and attract talent has never been more critical than it is in today's dramatically changing world. **Going forward the economic recovery of the SR will rely heavily on our ability to grow our 'human capital' base.**

Strengthened connectivity across the region (digital and transportation, especially with a focus on the efficient movement of freight) will enable interaction between regional economic drivers. This includes collaboration across the cities and metropolitan areas, the Atlantic Economic Corridor, Eastern Corridor, Key Towns and our network of towns and villages in addition to efficient freight movement between ports and airports (essential for an island open market economy). RSES Chapter 4 'A Strong Economy' and Chapter 6 'Connectivity' both address the importance of digital and transport connectivity to underpin the Region's economic drivers.

Figure 3 Economic Principles of the RSES



2.6. Implementation Actions of the RSES

The RSES is an action focused strategy, with goals (the eleven strategy statements of Figure 1) and Regional Policy Objectives (RPOs) that align to Project Ireland 2040: NPF and national economic policy.

It is important that DETE are integrated as a key stakeholder and have a good understanding of our implementation actions as the final output of this consultation will be an S3 strategy with specific actions and clearly articulated goals and objectives to inform investment in research, development, and innovation nationally and regionally. The SRA welcomed the Department's participation in recent workshops hosted by the SRA in the development of S3 and Smart Region frameworks under RSES implementation. The SRA continue to engage closely with the development of Regional Enterprise Plans (REPs), are a steering group member and key stakeholder in the formulation and implementation

of actions under REPs and network closely with REP project managers, as actions under REPs and RSES implementation are closely aligned.

On a similar level, the actions that will be developed to progress investment in research, development and innovation regionally under the S3 strategy needs to, and will benefit from, close alignment with RSES implementation actions to meet the specific needs of the region.

As part of our active implementation strategy the SRA have identified **41 objectives as "active"**, where the SRA is providing leadership and regional level co-ordination between stakeholders to progress actions and achieve strengthened policy commitments, funding and delivery of projects under the RSES pillars of a Creative and Innovative, Liveable and Green Region.

Examples of tangible progress under themes of a Learning Region, Sustainable Mobility, International Connectivity and a Smart Region have been highlighted above.

Significantly for promoting Life-Long Learning as a key attribute of knowledge diffusion throughout the Regions, as stated above the SRA is currently preparing a Learning Region Action Plan in conjunction with a wide variety of education and training stakeholders. The aims of this action plan are directly relevant and supportive of the S3 strategy and for objectives and actions in support of our higher education and training sectors under the S3 strategy (outlined in more detail below).

In addition to active RPOs, the SRA have identified 56 objectives that are instructive in nature whereby the SRA take a statutory lead role in monitoring City and County Development Plans, Government Policy and the plans and strategies of state agencies and infrastructure providers to ensure the requirements of our RSES objectives are being integrated and achieved.

The SRA is also a key stakeholder and consultee supporting department and agency initiatives that align with the RSES. The SRA monitor and contribute positively to stakeholder consultation processes, bringing an emphasis on action delivery for the Region and alignment with the RSES.

The pursuit of these objectives through RSES implementation in active, instructive and supportive capacities, delivers on priorities for our Region and strengthens the conditions in our Region for enterprise creation and innovation.

Aligning actions under the new national S3 Strategy with RSES implementation actions and a strong regional dimension for S3, reinforces the successful implementation of both strategies and presents a fundamental opportunity for partnership.

The recognition within the consultation paper that the RSES will inform the S3 and that the Regional Assemblies are key stakeholders in the S3 process, with the Assemblies playing an integral role in the development of this strategy" is welcomed.

This commitment and support to the role of the Assemblies and RSES needs to be strengthened to reflect the active phase of RSES implementation and leverage the leadership and co-ordinating role of Regional Assemblies through our diverse roles.

3. Responses to Consultation Questions

3.1. Sectoral Strengths

Q: Do you agree with the suggested areas of strength for the three regions as set out above? Are there other areas of strength in the three regions to be highlighted?

For a long-term strategy and to set our Region on its pathway for transformative change to 2031 and 2040, over which timeframe jobs and sectors will continue evolving through innovation, the RSES places an emphasis on building economic resilience and strengthening conditions that support innovation and enterprise growth, which will leverage our existing strengths and emerging sectors.

The economic vision for the Southern Region, under Section 4.2 of the RSES, is to enable sustainable, competitive, inclusive, and resilient growth. To address economic challenges and vulnerabilities, it is important that the SR sustains what we have in the immediate term and transforms our enterprise base for longer term resilience. **To achieve this, a regional S3 approach is crucial.**

The SRA agree with the suggested areas of strengths for the region as set out in the consultation paper which are also broadly reflected in the sectoral strengths identified in the RSES. However, in order to draw on the unique strengths and capabilities of each of the regions it is **necessary to identify more specific and niche priority areas** through an evidence base and participatory approach. This is clear from the number of SR sectoral strengths that are also highlighted for both the Mid-West and Eastern and Midlands regions further emphasising the need for a targeted place-based approach to S3.

Resulting from an extensive bottom-up collaborative macroanalysis of the Region[2] the following sectors were identified as the **top 10 high potential areas in the SR** that could present a competitive advantage:

1. Biopharmaceuticals and pharmaceuticals 4.0
2. Additive Manufacturing
3. Applied IoT
4. Efficient and sustainable manufacturing
5. Marine Technologies
6. Biobased economy
7. Fin Tech
8. Cybersecurity
9. Precision Agriculture and smart farming
10. Blue Energy

Q: What, in your opinion, are the key sectors in your region? What are the skills, assets and capabilities within your region?

Further to the regional macroanalysis referred to previously external experts Bable performed a sectoral SWOT analysis and informed by stakeholder input identified **21 priority areas for the Southern Region**. These build on the existing sectoral strengths and are centred around a direction of

[2] Regional Approach for development of a Smart Specialisation Strategy in the Southern Region, Bable, 2021

transformation. The priority areas are cross-sectoral have the potential to impact on several sectors and markets as outlined below:

Priority Area	Target Sectors and Markets	Rationale	Key Stakeholders
1. Additive Manufacturing	• Life Sciences (Prosthetics, Orthotics, Implants, Devices, etc.) • High Tech Manufacturing (Embedded Sensors, Aerospace, Automotive, Construction)	• The medical devices industry in Southern Region has invested strongly in the development and commercialisation of additive manufacturing for the health and life sciences sector. • The region has a strong applied R&D focus in the area with several research centres offering facilities for technology development and application. • Additive manufacturing is predicted to be a highly disruptive force within the global manufacturing industry and the market is expected to shift from prototyping to mass production. The field is projected to grow at a rate of 26% over the next years.[3]	**Research Centres** • Rapid Innovation Unit • SEAM • Irish Manufacturing Research centre • CONFIRM • SSPC **Private Sector** • Stryker (Amagine Institute) • Additive • Croom Precision medical **Clusters** • STEM South-West cluster • Emerald Aerospace group
2. Advanced Transport & Mobility Systems	• Transport (connected and autonomous vehicles, shared EV modalities) • Aerospace (unmanned aerial vehicles, autonomous drones) • Digital industries (IoT, advanced software, advanced connectivity)	• Investments in the relevant technologies across the mobility landscape are continuing to accelerate. The market is expected to reach USD 91b by 2026 (CAGR 18.4% from 2020) • Europe's ambitious climate goals are also pushing the sector forward with increased investments in the transition towards more sustainable mobility. • Research capabilities and testbed infrastructures are present in the region, with strong industry collaboration and partnerships	**Research Centres** • Lero **Private Sector** • Red Hat • Shannon Group • Cluster members **Clusters** • Shannon Cluster

[3] https://www.statista.com/statistics/284863/additive-manufacturing-projected-global-market-size/

3. Applied IoT	• Digital industries (cloud computing, It, networks, etc.) • High-tech manufacturing (IIoT) • Agrifood (agri-etch, precision agriculture, etc.)	• IoT is being applied across a wide-ranging of industries, driving a market that reached UDS 250b in 2019 and is projected to reach USD 1,463b (CAGR 24%). • This is a crosscutting area of specialisation that taps into the region's research strength in software, ICT, and cyber-physical systems and innovative applications being developed together with the industry.	**Research Centres** • IMaR • Nimbus • TSSG • Dell IoT Lab • ACORN **Clusters** Applied IoT Gateway Cluster
4. Bio-based economy	• Agri-food (biomass resource) • Bioeconomy (biorefining, bioconversion, sustainable materials) • Blue Growth Industries (bioplastics from seaweed)	• Lisheen is a leading area for the development of the Irish bioeconomy. • The Bioeconomy Innovation and Piloting Facility is a critical infrastructure for scaling technologies that convert Ireland's abundant natural resources to high-value products. • Extensive research into the conversion of biomass to food ingredients, feed ingredients, pharmaceuticals, natural chemicals, fertilisers, and biodegradable plastics, is ongoing in the region. • Development of bio-based composite materials for producing carbon fibres for use in end-user sectors such as transportation, renewable energy, and construction is also underway.	**Research Centres** • Teagasc • Higher Education Institutions • Shannon ABC • National Bioeconomy Campus Lisheen • Irish Bioeconomy Foundation • Walton Institute **Private Sector** • Glanbia Ireland • Carbery Group • Dairygold • NutraMara • BioAtlantis Ltd. **Clusters** • Circular Bioeconomy Cluster SW
5. Biopharmaceuticals and Pharmaceuticals 4.0	• Life Sciences (Molecular and cellular communication, Clinical and Translational research) • High Tech Manufacturing (Bio) Process Engineering, Process Analytics, Continuous Processing, Model predictive Control) • Bioeconomy	• All the world's top 10 pharmaceutical companies have substantial operations in Ireland. • Circa €2 billion invested in Biopharma R&D by IDA client companies annually. • Manufacturing excellence in Biopharmaceuticals is a hallmark of Ireland's success in the sector making the country the 3rd largest exporter of pharmaceuticals globally. • The COVID-19 pandemic has put the biopharma industry at the centre of global attention with substantial investments in innovation and digitalisation to improve cost and time effectiveness.	**Research Centres** • SSPC • PMTC • CONFIRM • Rapid Innovation Unit • SEAM • Synbiocentre • PMBRC • Cork University Hospital • HRB Clinical Research Facility Cork • Mercy University Hospital **Private Sector** • AbbVie • Abbott • Astellas • Regeneron • Eli Lilly • Stryker • Additive

		• The biopharma industry is expected to grow at a 10.6% CAGR between 2020 and 2027. • The European Cluster Observatory (2015) found the emerging Biopharma industry 'to show the most dynamic cross-sectoral linkages', with many linkages to other industries and technological areas. • The Southern Region has a strong presence of pharmaceuticals companies and research centres conduction state-of-the-art research which can be leveraged to be leaders in the biopharma industry and manufacturing of pharmaceuticals.	• Croom Precision medical • Novartis • BD • Rowa Pharmaceuticals, etc. **Clusters** • STEM South-West cluster
6. Blue Bioeconomy	• Blue Growth Industries (bioplastics from seaweed/fish waste) • Bioeconomy (Sea vegetable aquaculture, microalgal biofuels)	• The objective to create commercially viable alternatives to existing fuels, cosmetics, plastics, livestock feed etc. from marine plants and animals has not been fully realised but is an area of high research interest, globally and to the region. (Emerging Sector) • Ireland is one of the three largest producers of algae biomass in Europe. • The European Economic and Social Committee has requested that the blue bioeconomy become one of the flagship areas of EU policy.	**Research Centres** • MaREI • AFDC • Bantry Marine Research Station • Teagasc **Private Sector** • Wild Irish Seaweeds Ltd • Brandon Bioscience • Green Biofuels Ireland Ltd • ESB
7. Blue Energy	• Energy (energy storage and transmission) • Blue Growth Industries (Wind turbines, tidal/wave energy technologies)	• The region has strong renewable energy resources, including wave, tidal and offshore wind. The planned Celtic Interconnector will further foster the development of the region's renewable resources. • The region is the only one in Ireland with a coal-fired power plant. • Growth in intermittent renewables will require investment in energy storage (batteries) and grid solutions. • Sustainable energy will be a crucial component of reaching Ireland's commitment towards carbon neutrality by 2050.	**Research Centres** • IERC • MaREI • CEEDD **Private Sector** • Resolute Marine • Ocean Energy Ltd. • Suir Engineering • Fastnet Shipping Ltd • Shannon Foynes Port Company • ESB **Clusters** • Shannon Energy Valley • Energy Cork

8. Creative Industries	• Digital industries • General industries (industrial/product design, UX-tech, service design, etc.) • Digital content (advertising and brand, social media, online distribution, mobile applications, AR/VR/XR platforms)	• Creative industries are increasingly seen as a source of structural economic transformation. • Therefore, under Future Jobs Ireland, a roadmap for the Creative Industries is underway to push for the creative economy in Ireland. • There is a need to diversify the region's enterprise base from high-tech manufacturing to more (high-tech) knowledge-intensive services. • There is an opportunity to leverage the region's existing research capabilities in design and creative services (incl. digital technologies such as AR/VR) and pockets of design-based industries.	**Research Centres** • Digital Arts Lab at ACADEmy • ISRG's Centre for Creative informatics • CEIDE • XRIL Nimbus Research Centre • gameCORE • designCORE • Design+ Gateway **Clusters** • Creative Ireland
9. Cyber-security	• Digital Industries • Public administration & services • Critical infrastructure sectors • General industries	• Increased regulations on data privacy, more sophisticated scamming and phishing, and growth in identity theft are major trends that will demand sophisticated solutions that will lead to significant job creation within the cybersecurity sector. • While many cybersecurity clusters are emerging around the world, they all face the same fundamental challenge: a shortage of skilled talent. As such, the industry landscape is at a tipping point where those clusters that succeed in generating, attracting, and retaining sufficient talent will be the ones that establish themselves as the world's most prominent. • Cyber Ireland is boosting the industry forward by tackling the urgent skills shortage challenges, but also the need for research and innovation infrastructure, the promotion and education about cyber, as well as internationalisation. • Cork is the centre of Ireland's cybersecurity cluster and has proven to be a successful location for both FDI and indigenous companies.	**Research Centres** • Lero • Insight • CONNECT • MTU • Walton Institute **Private Sector** • AT&T Cybersecurity, Blackberry Cylance, eSentire, FireEye, For-cepoint, IBM, VMware, John-son Controls, Keeper Security, McAfee, McKesson, Nuix, Qualcomm, So-larwinds, Sonicwall, Sophos, TransUnion, Trend Micro, UTRC, Red Hat, CipherTechs, Security Risk Advisors **Clusters** • Cyber Ireland
10. Digital service sectors for smart regions	• Life Sciences (E-health, Telemedicine) • Energy (Smart Homes and Smart Grids) • Digital & ICT (E-governance)	• The Southern Region has the ambition to be a Smart Region and is working with the local authorities across the region to realise this ambition.	**Public Sector** • SRA • Local Authorities • City Councils **Private Sector**

	• Mobility (Autonomous Mobility, MaaS)	• The Smart Specialisation and the Smart Region ambitions of the Southern Region hold the opportunity to be the foundation for an emerging specialisation in digital services for smart regions. • Regions are at the core of the EU Green Deal with a great focus on leveraging digitalisation to improve the quality of life in regions.	• IoT and Smart services providers [4] **Research Centres** • Future Mobility Campus Ireland **Clusters** • All Ireland Smart Cities Forum
11. Efficient and Sustainable Manufacturing	• High tech manufacturing (Eco-conscious production) • Life Sciences (Waste and water management, Resource Recovery, Recycling) • Energy (Waste incineration, Energy Efficiency) • Bioeconomy (active carbon filtration, biological degradation, membrane filtration technology)	• The manufacture of medicines and drugs makes use of chemicals, materials and other substances that are potentially toxic if allowed into the environment. Ireland currently exports half of this hazardous waste to foreign countries. • As the Southern Region has a huge critical mass of pharmaceutical and med-tech manufacturing companies, there is a strong opportunity to invest in waste and wastewater management which complements the manufacturing growth. (Emerging Sector) • With the ambitious carbon neutrality goal set by the Irish government, the pharma and MedTech manufacturing industry there is a huge opportunity for energy-efficient production and development of healthcare solutions that use low energy during operations.	**Research Centres** • PMTC • CONFIRM • Cork University Hospital **Private Sector** • Pharma and biotech companies in the region • Waste Management companies (e.g., Veolia, Invader) **Clusters** • STEM South-West cluster
12. FilmTech	• Screen Industries (audio-visual post-production/visual effects) • Digital industries (software development, AI-based design, cloud computing)	• There is an emerging screens industry in the Mid-West, which is gaining momentum thanks to the promotion efforts of Film in Limerick and the recent establishment of Troy Studios – Ireland's newest and largest studio facility. • Many of the region's strengths in software and ICT, can also be redirected to meet the growing demands for advanced digital technologies within the screens industries.	**Research Centres** • Troy Studios • ENGINE Hub **Clusters** • Film in Limerick

[4] https://www.enterprise-ireland.com/en/Events/OurEvents/Smart-Cities-and-IoT/Smart_Cities_IOT_Brochure2019.pdf

13. Fintech	• International Financial Services - IFS (Investments, funds, & trading, Ratings agencies, Corp. treasury operations, Payments & banking, Insurance, Reinsurance, Lending & SMB finance) • Digital Industries (FinTech, Insurtech, Regtech, WealthTech, Infosecurity/ Cybersecurity, Blockchain/ Cryptocurrency, Paytech, CX-Tech) • Aerospace (Aviation financing) • Global business services -GBS (Analytics & BI, LegalTech, HR & prof. services)	• Ireland is home to leading global financial services institutions and the IFS sector makes a significant contribution to the economy, creating spill-over effects (30% of employment is outside Dublin) across the Southern Region in key locations (Cork, Limerick, Waterford, and Wexford). • The Southern Region offers an attractive alternative to Dublin for IFS firms and boasts emerging high-tech indigenous enterprises, skills and talent from renowned Business Schools, and key clusters pushing the advancement of the industry. • There is a terrific opportunity to make the Southern Region a European Hub for tech start-ups serving the IFS and leverage the priority set for the sector at the national level.	**Research Centres** • GRCTC (Cork) • UCC's Centre for Investment Research (Cork) • UCC's FSIC (Cork) • RDI Hub (Kerry) • WIT's RIKON (Waterford) • TSSG (Waterford) • IT Carlow's InsurTech Network Centre Accelerator (Carlow) **Private Sector** • Fexco • SE Financial Services Cluster members **Clusters** • Cork Financial Service Forum • South-East Financial Services Cluster
14. Future Sustainability & Food Tourism	• Tourism (Hospitality, Leisure, Food & Beverage) • Agri-food	• New post-COVID-19 behavioural trends are pointing at the increasing relevance of sustainable tourism. • The Southern Region is best positioned to exploit this consumer demand trends by focusing on carbon offsetting in tourist transport and destinations, increased emphasis on outdoor activities, more hands-on heritage and cultural experiences, local food production, and slow tourism hubs. • Food Tourism is a strategic priority for Fáilte Ireland in for the post-pandemic recovery of the tourism industry. • The region's long tradition in agriculture and food products could be used as a brand for high-quality sustainable and affordable food experiences that can attract both domestic and international visitors.	**Private Sector** • Shannon Heritage • Cluster members **Clusters** • Kerry Tourism Industry Federation

15. Marine Technology	• Blue Growth Industries (Marine sensors, Subsea power cables, Subsea remotely operated vehicles) • Digital Technologies (Smart Ports, Blue data management)	• This area combines the Southern Region's natural marine resources and expertise in ICT. In addition, the region hosts multiple testing sites and research centres focused on the area. • The region is home to 4 of Ireland's 5 ports of national significance, all of which stand to benefit from smart and sustainable digitalisation strategies. • Blue growth is a focus of Ireland's goals and extending Industry 4.0 to the marine sector is a logical play towards the region's strengths.	**Research Centres** • HMRC • CRIS • CONFIRM • MMRRC **Private Sector** • 8 West Consulting • Central Solutions • DARE Technology • Luxcel Biosciences Ltd • Transas • EpiSensor • MAC • MeteoGroup Ireland • Ocean Survivor • SonarSim • UAV Evolution Ltd **Clusters** • SmartOcean Innovation Cluster
16. Nutritional food & high-value ingredients	• Agri-food (enhanced nutrition, novel product development) • Bioeconomy (biotechnology)	• There is increased exploitation of the abundant seaweed resource in the Southern region. The development of marine ingredients and extracts from seaweed is opening new value chains for the region. • Due to a greater understanding of human nutrition, research into nutritional solutions and higher value-added dairy products for infants, athletes, and the ageing population has increased. • The global functional food market size is estimated to reach approximately $268 billion, registering a CAGR of 6.7% from 2021 to 2027. • Product development, ingredient interactions, sensory and product analysis, and the development of new components and bioactive compounds from environmental and natural sources are some of the research focuses of companies and top research institutes in the region.	**Research Centres** • Teagasc • Higher Education Institutions • Shannon ABC • DAFM **Private Sector** • Glanbia Ireland • Kerrygold • Carbery • Arrabawn • North Cork Creameries • Tipperary Coop • Dairygold • DairyMaster • Dansko • CP Ingredients • Glenstal Foods • BioAtlantis Ltd. • NutraMara • NutriScience **Clusters** • Irish Food Tech
17. Precision Agriculture and Smart Farming	• Agri-food (Agri-tech, Precision Farming) • Digital Industries (ICT, Advanced data analytics, Blockchain)	• There is a unique collaboration between the agri-food sector and information technology companies and research institutes in Ireland, through the VistaMilk SFI research centre in Cork.	**Research Centres** • Teagasc • SFI • DAFM • TSSG • ICBF • Tyndall National Institute

		• Ongoing cutting-edge research on developing new algorithms to optimise soil, weather, animal, and grass growth data from satellite imagery for making precise decisions related to inputs, technologies, and management practices. • Numerous blockchain projects on food traceability, genetic trait performance, animal health and welfare, and end-to-end supply chain assurance for beef and dairy farmers are underway. (Emerging Sector)	• UCC • IDA Ireland • Smart Agri Hubs **Private Sector** • Glanbia • Dairygold • Cork Grassland Services • ICT Companies in Blockchain (IBM, ConsenSys, Fidelity, Deloitte) **Clusters** • Irish Food Tech
18. SportsTech	• Sports & Leisure • Digital media (fan engagement, broadcast) • Digital industries (IoT, data analytics, sports eCommerce, wearable tech) • Footwear & apparel industries	• Sport technologies and innovations have gained popularity both in outdoor and indoor activities, with an expected market growth of over USD 41b by 2026 (CARG 21.4% from 2020). • In the Mid-West, there is a growing cluster of international SportsTech companies concentrated in the region, which are leveraging data and technology for better insights. • By building on its research strength and innovation ecosystem, the region could become a springboard for a unique new area of specialisation, which intersects with software, ICT, media, health, nutrition, wearables, etc.	**Research Centres** • PESS • University of Limerick • eSports Lab • SportsTech Accelerator • Lero **Private Sector** • STATS • Cluster members **Clusters** • SportsTech Cluster
19. Sustainable Finance	• International Financial Services – IFS (Investments, funds, & trading, Banking, ESG investments and management) • Digital industries (fintech, insurtech, regtech)	• The growth of ESG investment is steadily increasing and Ireland already has a cluster of renewable energy infrastructure fund managers with €7 billion of assets under management. • EU developments on sustainable finance represent a significant opportunity for Ireland and the Southern Region to be in the vanguard of this growing area. • Synergies with the local digital industries to explore new opportunities with emerging tech strengths to develop unique tech solutions for this space.	**Clusters** • South-East Financial Services Cluster • Cork Financial Service Forum

20. Sustainable livestock management	• Agri-food (sustainability, efficiency, optimisation) • Life Sciences (Plant and animal genomics, breeding strategies)	• Ireland's ruminant production systems have one of the lowest carbon footprints in the EU due to the predominantly grass-based dietary plan for Irish cows. • The South-East and South-West have the highest proportion of specialist dairy farms and since the abolition of quotas in 2015, the Irish dairy sector is striving to be a global leader in the development of high value, environmentally sustainable products. • There is ongoing research at top-level institutions on how to sustainably grow a greater quantity of consistently higher quality herbage for animal consumption, as well as optimized management and breeding strategies. • The Origin Green sustainability programmes under Board Bia, including the Sustainable Dairy Assurance Scheme (SDAS), provide a strong regulatory environment that promotes improved sustainability practices amongst farmers.	**Research Centres** • Teagasc • DAFM • Bord Bia **Private Sector** • Farmers • Primary producers • Processors **Clusters** • Irish Food Tech
21. Tech for Tourism Regeneration	• Tourism (hospitality, leisure) • Passenger transport sector • Digital Industries • Creative industries	• The industry has been disproportionately affected by the pandemic over the past year, and major national efforts are underway not only to ensure that businesses survive but to ensure that they thrive. • Technology is increasingly seen as pivotal in supporting recovery and rebuilding traveller confidence. • There is a vibrant and growing tech start-up community in the region, underpinned by strong innovation infrastructure, which could be. • Local (digital) entrepreneurs may be already looking for market opportunities to help tackle the global pandemic crisis. If presented with the right challenge and provided with the right resources, they could support the recovery and revitalisation of the tourism industry.	**Research Centres** • Shannon Propeller Accelerator • XRIL at Nimbus Research Centre • Lero **Private Sector** • Shannon Heritage • Cluster members **Clusters** • Kerry Tourism Industry Federation

The list of stakeholders in the table have been assessed for potential to progress in the SR as part of the regional S3 implementation. The list of stakeholders will evolve and grow in line with the EDP.

Additional capabilities

- The SR is home to a number of cutting-edge research facilities that could further enable the key sectors identified and future emerging strengths.
- The Atlantic Economic Corridor (AEC) and the Eastern Corridor, which links with the Dublin-Belfast Corridor, are both cross border initiatives that receive strong policy support in the RSES. These draw inspiration from bringing together key stakeholders with a common agenda. These Corridors are regarded as economic engines for the Region and have significant potential to assist the development of cross-border collaboration on research and innovation.
- Centres of excellence such as the Precision
- Tier 1 & 2 ports – get sentence from RSES

Q: Which sectors could achieve critical mass in Ireland over the next seven years? Where are the opportunities and what needs to be done to unlock these opportunities?

Opportunities[5]

The prioritisation of the specialisation areas is determined according to the existing technological strengths and capacities of the region, as well as the external opportunities for each area. The above listed 21 priority areas were identified according to the evidence provided for each specialisation area. To further enhance this a set of indicators are selected to identify quantitatively and qualitatively the (1) capacity and (2) opportunity of each specialisation area.

Each of the 21 priority areas was graded based on these capacity and opportunity indicators. These have been plotted on the opportunity and capacity matrix in Figure 1. Each bubble represents a priority area and the size of the bubble the degree of linkage of the area with other identified priority areas. A bigger bubble such as Applied IoT has an impact on most of the other priority areas considering its cross-sectoral nature where a sector such as Sports tech with limited influence on the other areas is smaller in size.

[5] Regional Approach for development of a Smart Specialisation Strategy in the Southern Region, Bable, 2021

Figure 1 - Capacity and Opportunity Prioritisation Graph

The priority areas higher up in the graph, indicate areas where the region presents strong technological capacity. For example, the significantly high scores for **Biopharmaceuticals and Pharmaceuticals 4.0 reflect the industry's strong R&D activities and the region's technological competitive advantage** evidenced in the analysis. Conversely, **the areas at the bottom of the graph indicate the need to build such research and technological capabilities within the target industries**. In this case, areas such as Sustainable Finance and Creative Industries occupy a low position, given the lower research activity evidenced compared to the other areas.

The areas on the far right indicate the greatest opportunities, where there is considerable potential for future growth. For example, **Efficient and Sustainable Industries represent the area that is most aligned with the EU's strategic objectives and can therefore benefit from the largest share of allocated funding, as a consequence Applied IoT has one of the highest projected market growth rates.** Areas on the far left indicate the need to create growth opportunities to compensate for low market growth rates or the lack of alignment with EU policies and strategies specifically targeted to these areas. This is the case with FilmTech. Despite representing a significant opportunity for specialisation - especially in the Midwest - the FilmTech industry (like many other creative industries) has been hard hit by the COVID pandemic, resulting in the lowest market growth rates compared to other areas.

The capacity and opportunity matrix give a good overview of the key priority areas in the region. However, owing to limited stakeholder consultation with the private sector and unavailability of data, the prioritisation is based on certain assumptions and indicative data. While some of the data was unavailable due to confidentiality reasons, there was a lack of consistency in some data sets (e.g., employment per specialisation area). While there was strong and varied stakeholder input to support

the evidence-based research it does not satisfy the depth and scope required for a meaningful EDP. Therefore, **in the next stages of the EDP process, it is recommended to test the priority areas with the local innovation ecosystem, especially the private sector.** The further definition and review of these priority areas should be driven by the private sector as part of the next steps of the EDP process.

The recent and sobering report on Irelands climate status report has highlighted the commitment needed to achieve the objectives set out in the European Green Deal. To build up competitiveness, policymakers and businesses need to tap the innovative potential within the region with dedicated supports. Taking this into consideration it is reasonable to assume that sectors in this area will achieve critical mass over the next seven years regardless of where they sit within the SWOT analysis. These opportunities are outlined in the questions addressing the Green Transformation for Enterprise.

A key factor of a successful S3 and what sets it apart from other innovation policy is its ability to facilitate an agile response to take into account changing market conditions and be ready to pivot if factors dictate. As noted by report from Alison Hunter the S3 must 'act as a living document with perceived currency'. There is a requirement to build in ongoing reviews to routinely reassess the opportunities at the regional level taking into account external factors.

What needs to be done to unlock these opportunities

A key support to unlock opportunities for our existing and emerging sectoral strengths and achieve critical mass, is support for the conditions that will encourage enterprise creation and RD&I growth, making places in our regions attractive, resilient and future proofed with facilities, infrastructure capacity and human capital skills to dive S3 forward.

The SRA recommends that policies, objectives and actions under the S3 strategy should address:

- **Delivery of placemaking initiatives and infrastructure packages that support enterprise and attract RD& I growth**: An infrastructure led and placemaking approach to planning for jobs growth needs funding support. Infrastructure is the key factor to support new business formation, especially in attracting a diverse enterprise base within our existing settlements. Placemaking as a key ingredient of both quality of life and enterprise development which are interdependent. Investments in infrastructure packages to address Health Place Audits and enable co-ordinated placemaking initiatives between Local Authorities, infrastructure agencies and the development sector are supported to create a platform for enterprise creation and innovation for settlements. This should align with the RSES and City and County Development Plan spatial and economic hierarchy for settlements, building on cities and their associated metropolitan areas as engines of growth and, in parallel, support the economic role of Key Towns, network of towns, villages and diverse rural areas to be economically resilient. This priority aligns with and achieves RSES RPOs 11, 26, 30, 40-42, 61, 62 and 68.
- **Deliver infrastructure and services that will grow knowledge diffusion and develop a Learning Region**: As acknowledged in the Consultation Paper knowledge diffusion is a key enabler to our Region's economic resilience and growth. Supports to Higher Education Institutes and Education and Training Boards, the Regional Skills Fora and funding actions for life-long learning are critical. The SRA supports Lifelong Learning initiatives as essential components of a strong economy, as exemplified in Cork and Limerick's attainment of the UNESCO Learning City status and extend the UNESCO Learning City status to Waterford city, to create a regional knowledge triangle. The SRA supports the Technological University for the South-East (TUSE) and the Munster Technological University (MTU).
- **Support for Industry academia collaboration:** The low levels of collaboration between enterprise and academic-based researchers have been consistently identified as a challenge for the Irish research and enterprise system. It is a particular problem for Irish SMEs. (JRC report). Each

Technological University must be afforded the opportunity to demonstrate a unique market-led research offering informed by sectoral opportunities identified in the S3. A concern highlighted during the S3 stakeholder consultation was in some cases the expectation on HEI's to provide match funding excluding some HEIs from even applying for funding streams. The TU sector needs support for R&I activities with ringfenced funding aligned to S3 priorities to avoid duplication or having to compete with the more established universities. An opportunity mapping exercise for the TU sector would assist researchers in navigating funding options available. Recently established TUs are in a strong position and should be facilitated to build effective industry collaboration and explore innovative financial instruments to lead the way in a 'smarter' funding mix. The EC views this as a more responsible, result-oriented use of funds**.**

- **Increase IP generation and exploitation:** Further to the above point the SR has significantly low performance in terms of intellectual property (IP). This not only affects the region's competitive technological advantage but also undermines its ability to specialise in niche areas that require high technological innovation. During S3 consultation activities, stakeholders from different sectors repeatedly pointed out the need to increase IP generation and exploitation, either by expanding R&D infrastructure or intensifying industry-academia collaborations.
- **Deliver infrastructure that will support Regional Smart Specialisation and Clustering**: A strong focus on Smart Specialisation and Clustering offering an innovative approach to sustaining and enhancing regional economies is supported. The SRA seeks to leverage existing enterprise ecosystems across national, regional, and local level by funding initiatives that drive a regional approach to Smart Specialisation. Strengthened funding for research and innovation sectors and for the actions of enterprise agencies and Regional Enterprise Plans is recommended to support enterprise growth, innovation and diversity within our Region's sectors of strength.
  Clustering is one of the 5 economic principles in the RSES. It is critical to recognise that the status quo is no longer an option there is a need for disruptive and transformative change. Innovation by its nature is multi-disciplinary with advances coming through a combination of knowledge through a collaborative approach which is facilitated by a regional cluster programme. Clusters act as a delivery mechanism for S3 and need to be 'deliberate intervention to upgrade competitiveness and catalyse change' (Ifor Williams). This would also work towards addressing the limited progress in enhancing the productivity of domestic firms by stimulating R&I and promoting cooperation between foreign companies, local firms and public research centres. The RSES states that there is potential to strengthen collaboration and clustering activities between foreign and Irish owned enterprises, the Region's HEIs, and communities. This approach can put in place a favourable and connected regional business ecosystem in which new players emerge and support the development of new industrial value chains and emerging industries. Cyber Ireland - Ireland's Cyber Security Cluster – is cited as a case study in the RSES and this approach should be further explored in the new Strategy. This priority aligns with and achieves RSES RPOs 40, 51, 67 and 75.
- **Support for enterprises to build <u>distinctive</u> strengths.** There is a continuing concentration of technology-related activities in Ireland which necessitate the need for enterprises to build distinctive strengths and ensure a degree of diversity, to prevent crowding out or inflationary effect as enterprises compete for essentially the same skills.
- **Co-developing Transformation Roadmaps**: Once the priority areas have been selected it is critical these are further defined at the regional level with the local innovation ecosystem. The next step in the process is to develop individual transformation roadmaps, outlining activities and programmes to enable the transformation of priority areas that garner the most traction into economic strengths. External experts Bable have recommended setting up working groups for each of the priority areas to co-develop the transformation roadmap. The SRA would be key stakeholders on these working groups as the representative voice of local government and other key stakeholders.

- **Support for patent activity**: Patents are the main output of technology-oriented R&D. Patent activity is low across the three regions when compared with the top performing regions across Europe. Further analysis is required to understand why any what can be done to address this.
- **Design applications** ranked the lowest indicator for the SR, which is an important indicator of the region's technological creativity (invention) and the strength of its 'creative economy' – i.e., the result of the interrelations among technology, arts (artistic/cultural creativity), and entrepreneurship (economic creativity). In one of the workshops, a representative from the manufacturing sector highlighted the need to use creative input in product and service design to increase added value, instead of focusing too much on production efficiency. There is a need to **nurture the creative industries**, as they reflect an underlying creativity activity permeating the whole economy.

The recent Regional Innovation Scoreboard (RIS) 2021 shows that the Southern Region scores the lowest of the Irish Regions in relation to population with tertiary education and population involved in lifelong learning. The new Strategy should emphasise addressing these critical human capital issues in the Southern Region. The Strategy should present this within the context of implementing Ireland 2040 and balanced regional development objectives of the NPF and RSES. The Learning Region Action Plan will assist in informing the new Strategy as it aims to enhance lifelong learning, skills and the educational proposition (higher level and FET) in the Southern Region.

3.2. Digitalisation and Digital Transformation

Q: Is digitalisation impacting your sector or region? How?

Digitalisation and ICT are key enablers underpinning the success of many of the high-performing sectors identified in the SR and the Covid pandemic has highlighted and accelerated the need for investment in digitalisation, with many companies responding by moving their work online. At the same time the EU Green Deal places a great focus on leveraging digitalisation to improve the quality of life in regions. In order for the SR to achieve a smart potential future, we need to consider the opportunities, benefits and challenges that smart technologies can offer beyond the traditional applications. Nevertheless, the region has digital transformation needs that impede development progress.

Highspeed broadband needs: The world has witnessed an unprecedented acceleration in the move online which has highlighted digital disparities across the region. The lack of access to high-speed broadband, particularly in rural communities, has contributed to regional disparities in terms of skilled labour, productivity levels and competitiveness. **The provision of high-speed broadband** is essential to the delivery of the NPF, the RSESs and the government's rural development strategy "Our Rural Future" which aims close the gap in urban-rural digital connectivity. Households based in the Southern Region registered a fixed broadband connection rate of 83% in 2020, which was 2 percentage points below the State average of 85%.

The delivery of high-speed high-capacity broadband (delivery of the National Broadband Plan), Broadband Connection Points, wireless networks, high-capacity ICT infrastructure implementing Smart City and Smart Town/Village initiatives and Local Authority Digital Strategy actions need strong support. This is essential infrastructure for a competitive and resilient region, for the economy and also quality of life and access to services.

There is an urgent need to address digital and telecommunication blackspots, especially in remote and peripheral locations, and continually upgrade and investment in digital and telecommunications in our urban centres as they grow, connecting new homes and employment locations, is needed.

Digital skills deficits: Covid has brought the importance of upskilling to the fore, particularly digital skills. This pertains at all levels including upskilling older people in digital skills, building capabilities within advanced technologies and high performing sectors and developing skills pathways to bring businesses on their digital journey. The World Economic Forum's report "The Future of Jobs", expects that the Fourth Industrial revolution will bring major disruption to the scale at which upskilling and reskilling efforts currently take place. Changes will range from significant job creation to job displacement and from heightened labour productivity to widening skills gaps. They therefore call for broad, multi-stakeholder collaboration to develop and implement solutions.

Investment driven into digital should not be a one-off. It was noted by stakeholders during the Learning Region consultation activities that 'we are all at the infancy of this digital experience'.

Ireland ranks 6th out of the 28 EU Member States in the EC Digital Economy and Society Index (DESI) 2020. However, Ireland suffers from something of a 'digital paradigm' where overall (strong) performance masks significant differences in availability and uptake of digital opportunities across the country – a 'digital skills deficit' as noted by the OECD.[6] This was further validated by stakeholders on the Learning Region Action Plan who noted the 'perceived digital divide' across the region.

Q: Could your business or sector benefit from new digital technologies? What support would you need to adopt these technologies?

- Digital industries cover some of the core sectors in the information age, combining services related to information and communication technologies (ICTs) with the hardware they use. It is related to an increasingly cross-cutting technology and has become an element of most parts of economic activity. There is a growing push in Ireland for the adoption of disruptive technologies in industries, to meet emerging challenges such as the need for increased efficiency, shorter production chains, and increased flexibility. On the other hand, ICT skills are needed to drive productivity and growth in virtually all enterprise activities as digitisation creates new business models, new production methods, new processes, and new ways of working. Therefore, **greater ICT development is a priority across sectors for the Southern Region.** Enhanced quality and provision of ICT infra-structure are seen as critical for the rejuvenation of the Region's cities, towns, and rural areas. Moreover, it is an objective of the Region to build on Smart City and Smart Region initiatives and support a leadership role for the Southern Region as an innovator in smart technologies.[7]
- **Investment in upskilling**: It has been repeatedly recognised that Ireland and the Southern Region ranks high in terms of population with tertiary education, reflecting the region's track record in meeting the skills required by multinationals. However, the lower performance in lifelong learning may be a critical indicator for the region to focus on, given the massive transformations expected in almost all industries with the disruption of new technologies and digitalisation. Targeted investment for the HEI's to deliver focused training in digital skills at levels in response to industry needs.
- Develop **skills pathways** to bring businesses on their digital journey.

[6] Expert advice and support on Smart Specialisation Strategy (RIS3) in Ireland' by Alison Hunter, Economic and Public Policy Consultancy (EPPC) SPRL

[7] Regional Approach for development of a Smart Specialisation Strategy in the Southern Region, Bable

- **Skills mapping exercise**. Cork County Council are conducting the first countywide Talent Heat Map to showcase to the world the skills of the County. This exercise could be extended across the region with a focus on digital skills.
- **Enhance digital support to micro-enterprise community**: External expert Alison Hunter highlighted a possible gap in digital support to Ireland's micro-enterprise community. The 'pipeline' support system outlined in EI's Regional Enterprise Plans links very strongly to this
- **Support to increase IP generation**: The SR has a significantly low performance in terms of intellectual property (IP). This not only affects the region's competitive technological advantage but also undermines its ability to specialise in niche areas that require high technological innovation. During the consultation activities carried out stakeholders from different sectors repeatedly pointed out the need to increase IP generation and exploitation, either by expanding R&D infrastructure or intensifying industry-academia collaborations.
- **Profiling Regional Technological Advantages**: The rapid rise of advanced technologies is transforming businesses, industries and society and it is profoundly changing the future competitiveness and employment dynamics of regions and nations. To design more appropriate S3, it is important to address main policy questions related to the maturity level and adoption rate of advanced technologies, the trends in key enabling factors such as skills, investment or entrepreneurship and comparison of the EU27 performance to key competing economies. The mapping of the technological competencies at the regional level can facilitate more comprehensive benchmarking exercises as well as complement the analytical efforts in a search for interregional cooperation and investment partnerships. Mapping regional technological knowledge can be instrumental when defining the S3 thematic priorities as it can bring more details about specific potential technological areas of interest and investment. A comparative analysis of the three regions demonstrated the poor performance of the Southern Region and even more so when compared to the high-performing regions across Europe.
- **Targeted investment to build on the Regional Hub Network:** Remote working has very quickly become part of normal working patterns in certain sectors, this potential has gained significant traction and attention since the outbreak of COVID-19. If supported correctly such changes have the potential to open up an array of economic and environmental opportunities for all of our regions. By supporting remote working as supporting infrastructure to S3 could help provide a wider range of options for workers and open opportunities for business solutions. Responding to citizen needs by providing a wide range of options will attract highly skilled workers and retain them in our regions.
- **Further investment into Regional Innovation Hubs informed by the S3 priorities:** Building on initiatives that respond to industry needs and informed by S3 priorities such as the establishment of the digital innovation hub in the South-East through the ICT-BIOCHAIN project focused on lignocellulose, manures, and horticulture value chains. Through this hub, region-specific bio-resource data models, as well as best practices, expert knowledge, and information regarding biomass supply chain sustainability, are provided by leaders and experts in the field.
- **Link the ICT research base with the traditional industries** such as manufacturing, farming, engineering etc to ensure they stay competitive by engaging the benefits of digitalisation. There needs to be targeted intervention to facilitate this collaboration.
- Explore possible measures that could be deployed to encourage more students and workers across all sectors to participate in educational courses and skills development programmes that support the digital transition
- Ensure sufficient resources are provided to the Southern Region's Higher Education Institutes in providing more Micro Credentials to potential workers and learners. The provision of Micro Credentials will be an important measure in developing the skills profile of workers and learners who wish to enhance their own skillset through courses that are short, low cost and flexible. Such programs should also ease the previously mentioned concerns of SMEs, as such courses will limit employee's time away from the day-to-day operations of their employers. Action #16 LRAP

Q: How can we improve the alignment of the country's ICT and digitalisation expertise, initiatives, and investments?

Smart Region Initiatives

Digital infrastructure and smart technologies are critical enablers for economic resilience and social revitalisation. This is particularly critical for the labour force, businesses, and delivery of services in the Covid-19 context.

The rapid development of digital technologies is resulting in terms such as 'smart cities', 'smart society' and 'smart regions' becoming more and more popular in the modern changing world (Bauer et al, 2019). **Smart Cities are the engines of a Smart Region and are key drivers in the delivery of a regional approach to Smart Specialisation Strategies (S3).** Key to achieving a competitive, innovative and productive regional economy is for all locations, urban and rural, to collaborate on Smart Region Initiatives. Collaboration through Smart City, Smart Towns and Smart Village initiatives is a significant opportunity where Smart Cities work together to solve problems, share knowledge, cultivate best practice and foster innovation.

The RSES offers an opportunity to co-ordinate efforts with the All-Ireland Smart Cities Forum to facilitate shared learning to further reinforce and cement this approach. A good practice model in the Southern Region is the Limerick Digital Strategy which seeks to enable the development of a smart, sustainable city and region where digital technologies improve quality of life, empower communities and enable economic growth. It demonstrates what can be achieved with resources and funding supports (for example digital officers and resources to project manage and deliver on Local Authority digital strategies).

Through the EU Interreg Cohes3ion project, the SRA are working with Maynooth University to advise the SRA and our stakeholders on **a Smart Region definition and to create a framework to facilitate Smart Cities Driving a Smart Region**.

This important work will be completed and disseminated to stakeholders over Q4 2021. Recommendations from the framework will be an important toolkit resource to assist our progress as a Smart Region and initiate smart region actions by stakeholders across smart themes (smart infrastructure, smart mobility, smart energy, smart technology, smart education, smart healthcare, smart governance inter alia). This will support our work across RSES implementation, the ERDF ROP 2021-2027 (under which Smart Regions are a leading theme) and Climate Action. **The final outputs from this project will be consulted on and shared with DETE to assist implementation of S3 actions**.

The overarching concept of "smart" is aimed at stimulating the best from each region and city and the SRA see a smart region being a key enabler in a regional approach to Smart Specialisation. One can't happen without the other. This work will consider what is a smart region, and how such a region could harness advancements in technological innovation and digitalisation to effectively deliver on the SRA regional priority goals.

The SRA recommends that DETE should support the delivery of digital infrastructure and optimising smart technologies across all sectors is critical to extend Smart Region initiatives region wide needs to be a priority under the S3 strategy.

Co-Working Hubs

The outbreak of COVID-19 has had a profound impact on all working environments.

With remote working becoming part of normal working patterns in certain sectors, it is clear that such changes have the potential to open up an array of economic and environmental opportunities for all regions.

By supporting remote working, policy makers could help provide a wider range of options for workers and open opportunities for business solutions. This includes allowing some workers to live and work in geographical areas of their own choice, reducing business costs associated with commercial properties, enhancing staff retention and wellbeing, providing greater access to a larger pool of applicants and talent, increasing productivity, reducing traffic congestion, enhancing quality of life and family time and reducing the level of greenhouse gas emissions from car usage.

From a strategic perspective, the ability of policy makers to utilise the potential benefits of remote working will also be a key enabling factor for S3 implementation and in ensuring the vision and objectives of the Southern Regional Assembly's RSES can be implemented, allowing for effective economic development to be achieved across Ireland. In this regard, the **development of urban centres of scale** continues to be a crucial component in addressing regional imbalances and remote working has the potential to **enhance the growth prospects of the Southern Region's Metropolitan Areas and Key Towns**.

Remote working has the potential to provide greater employment flexibility, which could enhance the quality of life offering of each of our regions; a key objective of the Southern Regional Assembly's RSES and enabling factor for a successful S3.

In the long term, the degree to which regions can capitalise on these potential benefits will depend on a variety of factors - including but not limited to - the availability of co-working hubs with high quality facilities and the provision of high-speed broadband within such hubs.

The SRA recommends that DETE should support greater levels of funding to the "Regional Enterprise Development Fund" (REDF) in order to deliver more co-working hubs in the Southern Region.

Such funding should also be delivered using local knowledge from appropriate local authorities and the Regional Assemblies of Ireland. Additional funding in this regard should be concentrated on delivering high quality co-working hubs of scale within or in close proximity to our Cities and Metropolitan Areas and Key Towns as defined by the Southern Regional Assembly's RSES and prominent rural communities in the region.

Furthermore, the SRA recommends exploring a range of **match funding opportunities for REDF projects** that will deliver additional co-working hubs of scale within or in close proximity to Designated Regional Growth Centres and Key Towns as defined by each Assembly's RSES and prominent rural communities. This could involve, but wouldn't be limited to, encouraging private sector companies to provide an element of match funding for these types of REDF projects or possibly removing the 20 per cent for these type of REDF projects that will provide a sizeable economic uplift to a geographical area.

The SRA recommends that policies, objectives and actions under the S3 strategy should address:

- **Invest and enhance digital infrastructures across our Region to support enterprise and RD&I growth:** It is essential for our economic competitiveness and resilience to provide new and continual re-investment in the quality of our digital infrastructure networks across cities, towns, villages and rural areas. The implementation of actions arising from the SRA's Smart Region Framework (currently being prepared), Local Authority Smart Cities and Smart Town initiatives, actions under Local Authority Digital Strategies and investment and upgrades

under the National Broadband Plan, in fibre technologies, wireless networks, Metropolitan Area Networks and other integrated digital infrastructures will provide a significant economic dividend for our Region. The recent publication by the three Regional Assemblies "Regional Co-Working Analysis" sets out eight key considerations for policy makers to realise the economic potential and benefits of remote working and should be further consulted and considered by the Department. This priority aligns with RSES RPOs 46, 48 and 133-138 (link to the report of the three Assemblies is at: https://www.southernassembly.ie/news/news-article/regional-co-working-analysis)

- **Support and expand the Southern Region's network of co-working hubs:** The degree to which urban and rural communities can capitalise on the potential economic benefits of remote working will depend on a variety of factors including the availability of co-working hubs with high quality facilities and the provision of high-speed broadband within such hubs. Therefore, sufficient investment should be provided to deliver more co-working hubs in line with the Region's settlement hierarchy with a focus on cities and Key Towns while delivering an appropriate level of hubs in targeted rural communities/settlements serving a wide hinterland area within the Southern Region. This priority aligns with and achieves RSES RPOs 26, 46, 48, 134, 136 and 138.
- **Safeguard funding for the implementation of the National Broadband Plan in rural communities based in the Southern Region:** Further to priorities for High Quality High-Capacity Digital Infrastructure, the provision of high-speed broadband to rural communities will be a key component in transforming the economic and social wellbeing of rural towns and villages based in the Southern Region, and it is imperative that this digital infrastructure is delivered in a timely and efficient manner. This priority aligns with and achieves RSES RPOs 26, 46, 48, 134, 136 and 138.
- **Marketing and communication**: The requirement for investment to enhance the digitalisation capacity of the region is evident however there are many facilities and opportunities available across the region not being optimised due to lack of visibility or complexity of accessing. This lack of communication and signposting was noted as a barrier throughout the stakeholder consultation. For example, through stakeholder discussion it came to light there was a general lack of awareness of the national 'supercomputer' housed in WIT and its availability to enterprise. To enable this communication SRA recommend conducting a **mapping exercise** to provide a detailed analysis of each regions current capacity determine the immediate needs. This could from part of the ongoing EDP.
- **Investment in later stage Technology Readiness Level (TRL):** There is a significant gap in investment into later stage Technology Readiness Level (TRL) innovations in Smart Manufacturing.
- Support for further initiatives such as The CONFIRM Digital Innovation Hub in Limerick, The Rapid Innovation Unit at UL (Irelands' first hospital-based innovation hub for medical device innovation. RIU aims to apply cutting edge 3D printing technologies to address previously unmet clinical needs to enhance patient quality of life), Irish Digital Engineering & Advanced Manufacturing Cluster (IDEAM).
- **Upskilling and reskilling of workers**: Skills shortage due to rapid technological advancement is a major challenge across most industries with the high-tech manufacturing sector highlighted as being particularly vulnerable in the SR. There is a need for upskilling and reskilling of workers through new and amended programmes in higher institutions, as well as training initiatives in the industry that address digital deficits among older workers. There is a need to make young people aware of the opportunities and generate interest in the sector. This was noted in particular for the manufacturing sector in reflection of the employee profile however is an issue across many sectors that needs to be mapped and addressed.

- **Early intervention**: Getting students involved in early stage of education, digital officers, encouraging more experts to get involved in teaching of digital courses.
- Investment in remote working hubs such as the RDI Hub in Kerry which offers cutting edge technology to SME's
- Development of **A Regional Digital Strategy** and appointment of a **Regional Digital Champion** to co-ordinate and align strategies and stakeholders
- **Support for the regions to participate in EU initiatives** such as the EU Digital Cities Challenge (DCC)and follow-on EU Intelligent Cities Challenge (ICC). These initiatives facilitate interregional learning for example Cork's Digital Strategy is a direct output of this DCC process. In overcoming the difficulties of the pandemic, ICC cities are eager to become engines of economic recovery by creating new business opportunities, advancing sustainable developments and enhancing their cities both digitally and socially. Through strategically planning and aligning outputs from these initiatives to S3 prioritise ensures we are meeting industry needs.
- **Support for the priorities of the Smart Region**: A key focus of the new Territorial Cohesion programme (2021-27) is 'A Smarter Europe' with a strong emphasis on innovative, digitalisation & smart economic transformation building on place-based strengths & potentials. This requires a strengthened interconnectedness between regional socio-economic development, environmental management and spatial planning practice and policy. There is a growing recognition that every type of region is facing industrial transition – as a result of changes to traditional manufacturing, digitalisation and technological advancements, climate change and, more recently, COVID-19 and its impact on retail trends – and thus have distinct needs. Meeting these needs over the next decade will require greater collaboration via the quadruple helix model to harness local and regional opportunities and endogenous assets in a smart and sustainable manner that not only diversifies the local/regional asset base and nurtures industry and technology clusters, but which also creates places that are adaptable with a strong transversal skills-base (Creamer, Connolly & Riveria, 2021).

3.3. Green Transformation for Enterprise

Q: What opportunities can you see as arising from Green Transformation for your sector or region?

The EU's Green Deal and associated Just Transition mechanism could provide very significant opportunities for Ireland to address its transition challenges in the areas of energy, industry and digitisation[8].

Cross-Cutting Opportunities

Opportunity: Existing frameworks for a Low Carbon Region

The RSES prioritises action on climate change across all economic sectors. The SRA is committed to implementing national policy under Ireland's Transition to a Low Carbon Energy Future 2015-2030 and Climate Action Plan 2019 to enable the Region's transition to a low carbon, climate resilient and environmentally sustainable economy and society.

[8] Expert advice and support on Smart Specialisation Strategy (RIS3) in Ireland' by Alison Hunter, Economic and Public Policy Consultancy (EPPC) SPRL

The RSES identifies priorities to build climate resilience and drive decarbonisation across all sectors and achieve resource efficiency.

Support for renewable energy sectors, transition of traditional sectors - especially in energy, agriculture and manufacturing - retrofitting our buildings, support for sustainable mobility, carbon sequestration, support for the circular economy, ecosystems services approaches, support for green and blue infrastructure and nature-based solutions **offers both mitigation and enterprise opportunities.**

The RSES advocates for **greater economic and sectoral diversification**, particularly in rural areas where it has been shown that many towns and villages are vulnerable to the effects of economic changes and shocks such as COVID-19 restrictions. The transition to a low carbon economy can offer significant opportunities to achieve sectoral diversification in these areas. However, it **requires support, structures and investment.**

In this regard, the SRA, in line with the RSES, recommends that **continued support is provided for the work of research and development, centres of excellence in the green economy and pilot projects**, for example the National Bio-Economy Hub in Lisheen in the Southern Region. Supporting actions at a local level, especially for funding and resources to implement our national policy, regional and local actions through the Climate Action Regional Offices and Local Authority Climate Change Adaptation Strategies is important for progress in this area.

In line with the RSES[9] the SRA recommends the following objectives for a green transition, and which are relevant for the S3 strategy include:

- Emphasise the urgency in the transition to a low carbon future, low carbon economy and circular economy through mechanisms such as the Climate Action Competitive Fund (RPO 56).
- Reduce carbon emissions across business, public and residential sectors and increase the use of renewable energy resources across electricity supply, heating, transport and agriculture (RPO 87 with specific sector objectives for Transport (RPOs 91-93), Agriculture (RPO 94), Heating (RPO 105) and Retrofitting (RPO 106).
- Ensure there are specific supports for renewable energy generation, upgrading older infrastructure with smart and green technologies and support for innovation and research funding (RPOs 95-104)
- Support for innovation in the bioeconomy as a major contributor to our indigenous renewal energy resources and as an economic driver for our rural areas (RPOs 55-57)
- Support for social enterprises and the circular economy within local communities to benefit environmental protection, employment generation and community development (RPO 60 and RPOs 107-109)

Through the implementation stages of the RSES, the SRA are developing a **Regional Decarbonisation Plan** in collaboration with central government and key stakeholders to provide a framework for action on de-carbonisation across all sectors. **This could be supported by government through targeted incentives to businesses for decarbonisation.**

The SRA are a partner agency on the EU Interreg Europe Project FIRESPOL which seeks to boost investment in Renewable Energy Sources (RES) by supporting the introduction of innovative financial solutions. Looking forward if the Southern Region is to deliver on the regional policy objectives for

[9]Regional Spatial and Economic Strategy for the Southern Region, Jan 2020, available online.

renewable energy generation and storage set out in the RSES, it will require far greater levels of private investment. Learnings from the Firespol project will inform the inclusion of specific goals and targets for the use of innovative Financial Instruments in the Renewable Energy Strategy for the SR. To inform the process of setting these goals and targets the SRA is exploring the option of **establishing a 'Renewable Energy Investment Forum' for the Southern Region** to provide an ongoing mechanism to discuss, explore and make recommendations on the use of innovative financial instruments supporting renewable energy investment in the region. This model could be emulated in other areas of S3 sectors.

These two actions are being implemented in the Region with multiple partners from the public and private sectors and Government can, through the Regional Assemblies, see the Actions set out in the Climate Action Plan 2019 developed and implemented on the ground, and thereby assist in meeting the state's national and international obligations. **By backing initiatives in this area, strengthened mechanisms to deliver on Climate Action will be achieved.**

The SRA continue to collaborate closely with the Climate Action Regional Offices to support Local Authority policy and actions on mitigation and adaptation, which increasingly have a focus on economic opportunities in the green economy. **Supporting the resources of agencies proactively advancing actions for the green economy and strengthened funding through streams such as the Climate Action Fund, are strongly encouraged.**

Opportunity: Marine

Our Region possesses a significant coastal resource with port and harbour assets to drive the marine economy, innovation in this sector and be a front runner under the Marine Spatial Planning system in Ireland. The RSES identifies priorities for our Region in the development of the Marine Economy, including alignment with implementation of sector objectives under the National Marine Planning Framework and objectives to **develop enterprises in the Blue Economy, the seafood sector, offshore renewable energy sectors and research driven clusters in Marine ICT and biotechnology.**

An opportunity lies in improved Marine Spatial Planning and implementation of the new National Marine Planning Framework. Marine spatial planning is an integrated planning framework to allocate the spatial and temporal distribution of human activities in marine areas. Activities include developing string spatial data analysis, modelling and decision sup-port capabilities to create coordinated marine and coastal planning and licensing to maximise the potential for the Blue Economy[10].

Opportunity: Green Infrastructure and Nature Based Design

The integration of Green and Blue Infrastructure (GBI) and Nature-Based Solutions (NBS) into policy formulation and project planning offers opportunities to reduce costs, enhance utilisation of existing infrastructure while creating a climate resilient economy.

Stakeholder engagement through the SRAs role on the EU Interreg Europe Blue Green City Project has found that there are significant gaps in know-how and practical application of green and blue infrastructure and nature-based solutions at a local level. In response to this the SRA are currently preparing a framework through external experts to help transfer good practice learning within our Region for integrating GBI and NBS throughout the project lifecycle, from design, planning, construction and on-going maintenance and for different scales (from local area masterplans to

[10] Regional Approach for development of a Smart Specialisation Strategy in the Southern Region, Bable

specific project designs). **This will be of particular benefit to Local Authorities, infrastructure agencies, developers and the construction sector and enterprise, in terms of design innovation and green design solutions for a lower carbon economy.**

Opportunity: Sustainable and Smart Mobility

Congestion caused by the dominance of private transport for most of our journeys is a cost to our economy, environment and health. It is eroding our quality of life, quality of our places and attractiveness for investment. Change to sustainable travel is urgently needed to ensure targeted growth is infrastructure led.

Recent reviews on sustainable mobility policy from the Department of Transport highlighted that commuting trips nationally are expected to rise by 35 per cent over current levels by 2040. While the more recent impacts of Covid-19 on travel to work patterns, with increased working from home and decreased private and public transport journeys to access work will require assessment, these predictions still indicate a potential long-term trend that presents a significant challenge in the context of high levels of jobs and employment growth targeted through the NPF and RSES.

The SRA recommends DETE through the S3 strategy identifies supporting infrastructure that will directly/indirectly assist its priority sectors

This is fundamental for lower carbon multi-modal transportation servicing the economy, in terms of accessibility for employees, freight distribution and supply chains, access to and between urban nodes and access to and from international markets (to our ports and airports).

To meet projected growth, increased levels of freight, delivery and services through HGVs will be generated. At city and town level, there will be a greater level of delivery and servicing activity. Innovations in freight distribution between and within our urban nodes (our cities and metropolitan areas and Key Towns especially) are important to service our economy in an efficient and green manner. Example of initiatives for the management of freight, which will require innovation for enterprise supplying these services and benefit all sectors with greener and more efficient deliveries and distribution services include:

- Examining the feasibility of consolidation centres and break-bulk facilities outside of the national road network in the medium term, to facilitate smaller lower emission vehicles delivering to town and city centres;
- Ensuring that delivery, servicing and waste management trips are made as green and quiet as possible using zero or low emission vehicles where appropriate; and
- Examine the case for urban or micro-consolidation to reduce the number of last-mile trips being made by motorised vehicles e.g. examining the case for cargo bikes or small electric vans delivering to businesses.

The SRA support the role of smart technology to achieve our objectives for lower carbon transport. This aligns with the EU's Green Deal support for increased digitalisation and use of data in the sector and management of our transport networks.

The SR is a leader in research, development and testing of Connected and Autonomous Vehicles and smart transport infrastructure, the Future Mobility Campus Ireland in Shannon is a positive example of our opportunity to be a world leader in developing this technology for the future of lower carbon smarter transport (https://futuremobilityireland.ie).

The RSES supports innovation in the transport sector and Smart Mobility which envisages the systematic integration of information and communication technologies (ICT) in planning, design, operations and management of public services including transport.

Smarter mobility across all transport sectors, including freight, delivery and services, will be a key pillar of a Smarter Region and enabling factor in the S3. To support the development of smart mobility, investment in digital infrastructures, research and innovation, new technologies, the sharing of data and integration of services (public and private operators) for multi-modal transport ecosystems (such as Mobility as a Service systems).

Opportunity: International Connectivity

The SRA are co-ordinating stakeholders in the preparation of a Regional Freight Strategy to make recommendations to the Department of Transport from the perspective of regional stakeholders involved in and interacting with the sector to improve efficiency and innovation in the lower carbon distribution of freight throughout our Region.

The SRA will welcome an opportunity to present progress to DETE on these strategies as they develop which will have key relevance for addressing connectivity infrastructure, logistic services and efficient, lower carbon supply chains for our enterprise stakeholders in support of S3 implementation.

Strengths:

Sectoral opportunities [11]

- **Bioeconomy**: Bioeconomy has experienced significant growth in activity in recent years and is an area of strength for Ireland owing to the natural resources and infrastructure available. In a quest to become more sustainable and resource-efficient, companies of all sizes are diversifying into the pro-duction and conversion of renewable biological resources, by-products, and waste streams into value-added products. Bioeconomy encompasses all sectors and systems that rely on biological resources and has the potential to support new jobs and grow Ireland's economy while achieving green targets of reduced carbon emissions and sustainability.
  Challenges and Opportunities
  - There is a need to scale up biorefining and bioprocessing in the region to bring about significant economic impacts. Regulations should also be put in place to manage competing land uses and optimise "end-of-life waste".
  - Due to the transdisciplinary nature of the bioeconomy and its wide array of applications, identification and prioritisation of sub-sectors are crucial to build scale in the ecosystem, improve the focus of programmes and projects, synthesise research, focus funding, and attract more foreign direct investment to the region.
  - Promotion of research-industry gateways, regional clusters, and working groups to lead the way in opportunity mapping for the sector, strategy alignment, identification of skills and monetary gaps, implementation of projects with the potential to increase activity, creation of a thriving environment for small and medium scale enterprises, and collaboration with international counterparts.
  - There is a need for enhanced seed funding in the built environment, as well as investor networks that are less risk-averse and take a long-term return view. Commercial investment in green solutions should also be incentivised to encourage more investment in sustainable solutions.

[11] Regional Approach for development of a Smart Specialisation Strategy in the Southern Region, Bable, 2021

- More youth engagement should be done to attract and retain young talents in the region. Lifestyle gaps across the region should also be bridged to encourage the retention of a qualified workforce. Education centred around sustainable living and circular economy should be introduced to kids in pre-school, primary, and secondary levels

- **Energy:** The Irish Government's policy laid out in Ireland's Transition to a Low Carbon Energy Future 2015-30 and Climate Action Plan 2019 makes it clear that it is an objective to promote change across sectors to achieve reduced GHG emissions, improve energy efficiency and increase the use of renewable energy sources. The Southern Region has strong assets and opportunities to lead the way in the energy transition while creating valuable jobs and attracting international investment for the Region.
- **Sustainable finance** is the capital required to tackle climate change and includes green bonds, ESG and socially responsible investing (SRI) investments, sustainable infrastructural investments, climate finance, and performance bonds. EU Green Deal's ambitions represent a significant opportunity for Ireland to be in the vanguard, as the country aims at be-coming a specialised hub in this growing area. By making it a priority, the region can initiate a push to improve the depth and awareness in the area: leveraging key local experts (e.g., Stephen Nolan, SEFSC's member, EC advisor and chair of the FC4S), exploring new opportunities with emerging tech strengths (e.g., Limerick-based Accuvio's software for ESG reporting), and developing the new specialised skills needed in the space
- **Blue-Green data centres** The Mid-West has a robust power grid infrastructure and dark fibre connectivity (capacity) to effectively serve a Cluster of Data Centres. Nautilus Data Technology in partnership with Shannon Foynes Port is to develop the first set of floating data centres in Europe, employing water cooling technology that increases efficiency, tackling high energy usage and emissions from data centres globally – establishing a new trend: blue-green data centres.
- **Green Tourism**: Being home to all three of Ireland's Regional Experience brands, namely, the Wild Atlantic Way, Ireland's Ancient East, and Ireland's Hidden Heartlands, the Southern Region is uniquely positioned to exploit the new consumer demand trends in a post-Covid-19 environment and strengthen its image in terms of outdoor activity and open space, as well as green, clean and sustainable destinations.
- **Agri-food** - The sector plays a vital role in Ireland's economy and has an even bigger impact in rural and coastal areas of the country. In the Southern Region however there is a need to address the environmental challenges that arise from increased pressure on limited land and marine resources to meet domestic and export requirements. This could be viewed as an opportunity to call for the development of more sustainable production processes in all aspects of the sector.
- **Bio-based economy**: This encompasses the production and conversion of renewable biological resources and waste streams into value-added products. Subsectors for specialisation for the region include biorefining, sustainable lactic acid, biodegradable plastics, bio-based fertilisers, biomaterials, natural chemicals, microalgal biofuels, food biotechnology, circular bioeconomy.
- MaaS (Mobility as a Service)
- Presence of MNC's in the Green Technology sector

Q: What challenges exist for enterprises trying to reduce emissions or introduce sustainable practices?

From the SRA's perspective, there needs to be greater harnessing of the EU Green Deal, alignment of funding through the NDP and leveraging opportunities for funding through the next ERDF ROP 2021-2027 to give strengthened financial support to enterprises in reducing their carbon emissions, integrating smart technologies for lower carbon processes, operating from lower carbon buildings (retrofitting) , integrating green infrastructure and nature based design solutions within their property and site assets and developing and accessing skilled workers to work within green industries.

The principle of the Disruptive Technologies and Climate Action Funds under Project Ireland 2040 are a good example of supports that need expansion and strengthening going forward to address the climate change emergency.

Funding needs to support and reward pilots and good practices within industries and initiatives need to transfer knowledge, learning and information on the rewards, including financial supports, for green transition.

Carbon taxes, to progress transition to lower carbon emissions, should be complemented with tax incentives and financial supports that reward lower carbon technologies, design, use of products and services and processes, across all scales of enterprise across all sectors.

Certification, recognition and trading on positive credentials for being a green enterprise needs stronger promotion and market awareness (an equivalent example would be quality assurance, buying Irish etc.)

The RSES sets objectives supporting the funding of programmes and initiatives that facilitate the transition of talent from declining industries to more competitive and green sectors (RPO 64) and provide schemes that fund and support energy conservation, efficiency and retrofitting for commercial building stock (RPO 56, 106).

The RSES also seeks a regional focus on the sectors covered by the Climate Action Plan and National Mitigation Plan. Through a Regional Decarbonisation Plan, sustainable economic pathways and a "Just Transition" needs to be supported so that the impacts of decarbonisation policies do not disproportionately affect vulnerable communities (RPO 90). Support for initiatives that assist a Just Transition in the diversification within our traditional sectors of strength to lower carbon practices and specialisms is needed.

Develop the right culture and framework to assist enterprises in their journey on 'going green'. As noted by the Harvard Business Review being green is no longer a cost of doing business; it is a catalyst for innovation, new market opportunity, and wealth creation.

Subsidise the cost of environmental compliance which can be excessive and off-putting to SME's. There are a range of supports for this transition however the on-going issue of complexity and heavy administration burden in accessing funding is again raised.

The Learning Region Action Plan found that there is a lack of demand for strategically important courses, particularly with respect to retrofitting, renewable energy, circular economy, environmental engineering and other sustainable engineering practises. Encouraging construction workers to participate in courses related to the Low Carbon economy – particularly in retrofitting – will be key to improving the energy efficiency of the Southern Region's residential stock. The overarching need to improve the energy efficiency of the Southern Region's residential sector is evident from the low levels of audited households to register a Building Energy Rating (BER) between "A" and "B". Between 2009 and 2020 , only 19 per cent of audited households in Ireland registered a BER between "A" and "B", with the corresponding ratios for households based in the Southern Region – particularly in the Mid-West and South-East – notably low and in most cases below the State average.

Thus, one of the actions identified in the Learning Region Action Plan is to explore possible measures that could be deployed to encourage more students and workers across all sectors to participate in educational courses and skills development programmes that support the transition to a Low Carbon and Circular Economy. For example, in March 2021 Skillnet Ireland introduced a Climate Action Upskilling scheme which will see a major expansion in its activities in the green economy, with a focus

of building sustainable practices in SMEs and on retrofit. This is an opportunity for the Region that is supported by this Action Plan.

Q: How could government or enterprise agencies assist you in meeting those challenges?

The SRA recommends that policies, objectives and actions under the S3 strategy should address the following priorities as a means to both assist the Region's green transition and low carbon future and also nurture innovation, technology development and enterprise opportunities within the green economy:

- **Support the Region's Green Economy:** The SRA recognise the transition to a low carbon economy can offer significant opportunities to achieve sectoral diversification in the Green Economy and the need for a Just Transition for employment to a greener future. However, it requires support, structures, and investment. In this regard, the SRA supports funding for research and development in Green Economy sectors and support for centres of excellence such as the National Bio-Economy Hub in Lisheen in the Southern Region. The NDP should support innovation in the bioeconomy as a major contributor to our indigenous renewal energy resources and as an economic driver for our rural areas. The SRA also support social enterprises and the circular economy within local communities to benefit environmental protection, employment generation and community development. This priority aligns with and achieves RSES RPOs 56-60.
- **Deliver action on Climate Change and transition to a low carbon future for all sectors:** A commitment to targets and actions that transition all our sectors and communities to a low carbon future to address the climate change emergency is needed. The SRA support the implementation of national policy on climate change, mitigation and adaptation and actions under the new Climate Action Bill. The SRA seek support for the initiatives of Climate Action Regional Offices in their important coordination with sectoral stakeholders and Local Authorities in delivering meaningful local actions for climate change mitigation and adaptation and the implementation of Local Authority Climate Change Adaptation Strategies. This priority aligns with and achieves RSES RPOs 56, 89 and 90.
- **Enhance and expand renewable energy infrastructure in the Southern Region:** The SRA support implementation of the National Energy Efficiency Action Plan and investment to improve energy efficiency, retrofit and future proof our Region's building stock (residential and commercial). Support renewable energy generation, specifically the need for significant upgrading of energy transmission infrastructure to integrate increased on shore and offshore renewable sources onto the National Grid to meet our targets. The development of international energy interconnections and upgrading power stations for renewable technologies are priorities for security of energy supply. Support actions through future Regional Renewable Energy Strategy and Regional Decarbonisation Plans. The SRA also support local and community renewable energy networks, micro renewable generation, climate smart countryside projects and connections from such initiatives to the grid. This priority aligns with and achieves RSES RPOs 87, 91-106 and 219-224.
- **Support the Region's Marine Economy:** The RSES supports the potential to grow the marine economy of the Southern Region. The NDP should give strengthened support to marine sectors and support the Regions to be first movers in the marine economy including investment and support for our Tier 1 and Tier 2 Ports (vital in the context of their role post Brexit and as drivers for Maine Sectors under the National Marine Planning Framework), fishing harbours, coastal towns and villages and research and innovation sectors, especially in areas of Off-Shore

Renewable Energy, Marine ICT and Biotechnology. This priority aligns with and achieves RSES RPOs 76-86 and 142-147.

- **Strengthen Biodiversity, Green and Blue Infrastructure in the Southern Region:** A requirement for strengthened Ecosystem Services approaches, Sustainable Urban Drainage Solutions and Nature-Based Design Solutions for all capital projects and works by Local Authorities and infrastructure agencies is supported, including infrastructure, serviced land and building projects for enterprise sectors. Initiatives for that bring Local Authorities and stakeholders together to enhance the biodiversity of the Regions, including contributions from enterprise, need to be driven. Specifically, the implementation of the All-Ireland Pollinator Plan and National Biodiversity Action Plan are supported. This priority aligns with and achieves RSES RPOs 110, 122-128, 200-201 and 218.
- **Enhance innovation in sustainable mobility and use of smart transport technologies in the Southern Region:** Transport infrastructure capital expenditure in the Region should involve a systematic integration of ICT in the planning, design, operations, and management of multi modal transport services of the Region's settlements. Investment should leverage intelligent low carbon e-mobility and Mobility as a Service Systems systems and leverage emerging sectors of strength including the Automated and Connected Vehicle (CAV) sector. Such innovation will benefit smarter freight, delivery and services, especially in the sustainable lower carbon distribution of goods and services. This priority aligns with and achieves RSES RPOs 157, 160-164, Cork MASP Objective 7 & 8, Limerick MASP Objective 7, and Waterford MASP Objective 6.
- **Increase the number of publicly owned EV charge points in the Southern Region:** An increased rate of capital expenditure to facilitate and encourage greater use of electric vehicles by developing more publicly owned recharging facilities in the Southern Region. Additional resources in this regard should aim to develop EV "Fast Charge" points or EV "High Powered Charge" points in strategic and accessible locations across the Region and incentivise higher uptake by enterprise and commercial vehicles. This priority aligns with and achieves RSES RPOs 91, 92 and 160-164.
- **Implement 10 Minute City and Town Concepts in the Southern Region:** Support the implementation of sustainable 10 Minute City and Town concepts as a key principle of quality place making and sustainable mobility (supporting the attractiveness and quality of life offer across our settlements for people to live, work and invest in our Regions) and support the initiatives of Local Authorities, transport agencies and communities with investment packages to achieve projects that enhance permeability to achieve sustainable 10 Minute City and Town concepts. Such projects can be cost effective and delivered in the short term. This priority aligns with and achieves RSES RPOs 151, 152, 160-165, 174, 176, Cork MASP Objective 7 & 8, Limerick MASP Objective 7, and Waterford MASP Objective 6.
- **Support Innovation and Strengthened Freight Distribution, Port and Airport Assets:** Greater priority is needed towards Ports and Airports in the Southern Region and innovations for the efficient, lower carbon movement of freight servicing our industrial sectors, recognising our multi modal transport networks along economic corridors, cities, Key Towns, our ports and airports as a collective strength for international connectivity and economic growth, with a key role for EU, UK, and international trade post Brexit. Optimising the capacity of these assets for economic competitiveness advances Regional Parity and provides a counterbalance to pressures on Dublin's infrastructure. Improved multi-modal regional connectivity (road, increased use of the extant rail network and interchange facilities) and guaranteed journey times for moving people and logistics to and from our urban nodes, along our economic corridors, Tier 1 and Tier 2 Port assets (Ports of Cork, Shannon- Foynes, Waterford-Belview and Rosslare Europort), National Airports (Cork and

Shannon) and Regional Airports (Kerry and Waterford) is important for our international connectivity, servicing our economic sectors with access to and from markets, supporting efficient supply chains for the economy and building our economic resilience. This priority aligns with and achieves RSES RPOs 140-150 and RPO 166.

- **Support the exploration of innovative financial solutions** to enhance levels of private investment. Look to the Interreg Europe Firespol project, as noted above, for learnings on this.
- **Use the SR as a living pilot testbed.** Research on the Smart Region has assessed the potential learnings of a key tool used by the Finn's is the concept of agile piloting, a co-creation method where companies develop their products in close collaboration with residents and city government.

3.4. Innovation Diffusion –

It is hoped that this S3 consultation will provide further, contemporary insight into the challenges facing Ireland for innovation diffusion, and we would like to hear from stakeholders about their experiences and suggestions for how we can improve the system. Some questions stakeholders might consider are:

Q: What are the barriers for innovation diffusion in Ireland? How can these barriers be broken down? Are their regional differences in these barriers?

Although the Southern Region ranks as a Strong Innovator, with an increasing innovation performance in 2019 relative to 2011, **the region's position relative to the EU average weakened** (from 113.3% to 111.3%) in the same period[12]. The regional performance shows relative strength for several indicators, such as marketing/organisational innovation and R&D expenditures in the public sector. Weak performance is registered for design applications, for which the region performs significantly below both the national and EU average (51% and 28%, respectively). Considering these scores, it is important to note that barriers to innovation diffusion[13] in the Southern Region include limitations of:

- The **difficulty in accessing funding and lack of awareness** of existing R&D supports are major barriers to scaling up at processing levels and the adoption of innovative technologies in the Southern Region. An overall lack of funding for Proof-of-Concept stages has been noted[14].
- There is a **lack of communication and collaboration** between SMEs and other domestic enterprises with Higher Education Institutions (HEIs) on the one hand and Multi-National Companies (MNCs) on the other. This issue highlights the importance of policies aimed at increasing the R&D efforts of domestic firms. MNCs can benefit domestic companies with global supply chains and technology innovation spill over, however research has shown that technology spill overs may appear only if local firms engage in innovation activities themselves[15].
- Even where companies may be convinced of the benefits, **the risks, and costs of R&D lead SMEs to be cautious**. According to the 2019 CSR[16], the demand for loans among SMEs in Ireland remains depressed since before 2012; an increasing share of SMEs either use internal funds or are deterred from investment altogether. The same report notes that the share of employment in SMEs is

[12] Regional Approach for development of a Smart Specialisation Strategy in the Southern Region, Bable, 2021

[13] 5 steps for innovation diffusion – *Knowledge, Persuasion, Decision making, Implementation*, Confirmation; Rogers, Everett M. (1962). Diffusion of innovations (1st ed.). New York: Free Press of Glencoe. OCLC 254636.

[14] Regional Approach for development of a Smart Specialisation Strategy in the Southern Region, Bable, 2021

[15] EU Country Semester Report, 2019. https://ec.europa.eu/info/sites/default/files/file_import/2019-european-semester-country-report-ireland_en.pdf

[16] EU Country Semester Report, 2019. https://ec.europa.eu/info/sites/default/files/file_import/2019-european-semester-country-report-ireland_en.pdf

decreasing while larger firms gained, probably due to higher wages. In relative terms, Ireland has seen the largest transfer of jobs from SMEs to larger firms in the EU between 2008 and 2017.

- **Lack of investment in public R&D;** relative low levels of expenditure may have a negative impact on the ability to sustain in the longer run the high quality of the Irish scientific production and the highly qualified human resources needed in the Irish economy. The CSR notes that six of the eight top-ranked Irish universities have lost ground in the QS World University Rankings 2019. Figures show that the ETBs based in the Southern Region received capital funding – per FET beneficiary – below the State average in each of the last two years[17], similarly the absolute level of general capital funding provided to the Southern Region's HEIs for each year between 2010 and 2020 shows a decline, falling from over €60m to €23.4m of 2020.[18]
- **MNCs benefit over SMEs or domestic enterprises**; The Southern region is particularly dependent on MNCs around the larger cities of Cork and Limerick; the 2019 CSR also highlights that foreign firms operating in Ireland tend to benefit more from public sector R&D support – representing 80% of total public R&D spending, tax credits are the main instrument of public R&D support in Ireland[19].
- **Government departments working in silos** - Lack of networking forums between the different agencies on an ongoing basis for the purpose of sharing information and knowledge. The RSES steering groups could facilitate this sharing of information between agencies.
- **Encouraging collaboration** between HEI's, the Regional Skills Fora, ETBs, inter alia, of the Region presents the potential to develop Knowledge Diffusion in areas most exposed to technological disruption. By supporting community and education providers, our Region can ensure that knowledge and skills are spread to all citizens to help address skills shortages and lifelong learning challenges. The research and innovation programmes underway in HEIs across the Region are positive ways to diffuse new skills, new technology and new learning opportunities across enterprises. Stakeholder engagement in the LRAP found that it is essential that a borrowing framework is agreed and developed for Technological Universities, enhancing the ability of the Southern Region's HEIs in developing their own infrastructure and improving their educational and research offering. In conjunction to this, there should be an immediate review of the "Recurrent Funding Allocation Model". Some stakeholders felt that this funding model was constraining the ability of HEIs in further growing their student base, as the provision of funding resources was not directly linked to the growth of student numbers.

Regional Differences

The RSES states that human capital is central to the Southern Regions economic success and our social development, with the availability of well-educated, skilled and knowledgeable citizens acting as a fundamental driver of regional economic development and social progress. However, SR ranks the lowest of the three regions in terms of population with tertiary education and population involved in Lifelong Learning highlighting a particular barrier to the SR. Capital investment in the Region's ETBs – per FET beneficiary – continues to remain considerably lower. Over the past decade, the level of core funding collectively provided to the Higher Education Institutes based in the Southern Region – per student enrolled – has gradually fallen. General capital funding provided to the Higher Education Institutes based in the Region – per undergraduate student enrolled – has also fallen in the last decade.

This presents a conundrum for the Region – human capital presents the biggest opportunity for economic success, but important human capital indicators are going in the wrong direction. Given this situation, the emerging Learning Region Action Plan presents a significant opportunity for the

[17] Learning Region Action Plan, SRA, 2021

[18] Learning Region Action Plan, SRA, 2021

[19] Irish Government Economic and Evaluation Service, 2018

Southern Region. Uniquely, the Region contains two UNESCO "Learning Cities". To put this into context, only five countries in the world have two or more Learning Cities. This unpins the Regions potential to improve human capital and make it a successful economic proposition. The Learning Region Action Plan therefore aims to replicate and expand the UNESCO "Learning Cities" initiatives right across the Southern Region to create a **Learning Region**. The focus would be aligned to UNESCO's work on Learning Cities and the overall objectives would be to improving access to education and learning opportunities and develop a culture of education, lifelong learning and skills development.

This would require a Co-ordinator at a Southern Regional level but also partners at a local level to ensure active support and impact is achieved. The Learning Region Network should not be another layer in the established educational and learning framework of the Southern Region. It will instead be a supportive and organic network that links people and communities together to focus on a strategic area (or areas) in joint initiatives and actions; thereby complimenting existing structures and activities of relevant bodies.

Developing learning and leaving no-one behind are the underlining principles and motivation of the Learning Region Network. Development of a collaborative approach will be key for the delivery of the Learning Region Network, where Government (National, Regional and Local plus state agencies), Industry (and their representative bodies), Higher Education and Civic Society (E.g., PPN, Community based organisations) can share their knowledge and work together. In this regard, Smart Specialisation is a key tool to strengthen collaboration, coordination and engagement bringing together key stakeholders (including researchers and industry) in a geographic area to identify the competitive advantages of a region with the view of developing economic opportunities.

Q: What channels for diffusion are used by your business or sector?

Channels for innovation diffusion typically used in the Southern Region include:

- **Existing hubs and technology gateways** both within research institutions and within companies, for example: the tech cluster at it@Cork has more than 220 companies from the tech sector in the South-West, it provides support through training, upskilling, networking, and knowledge-sharing opportunities. Similarly, the TSSG Gateway at WIT undertakes cutting edge research into technologies to verify their capabilities and applicability for society, and to work in collaboration with industry to ensure their commercialisation.
- **Southern Regional Assembly (SRA) initiatives,** through (a) individual projects (e.g.: Interreg funded Cohesion project with a focus on Smart Specialisation and understanding EDP) and (b) the implementation of the Southern RSES; the SRA consistently facilitates collaborations between the sub-regional structures such as the Regional Enterprise Plans (REP's) and stakeholders such as the Local Authorities, enterprise agencies etc.
- The European Territorial Cooperation (ETC) Network for the Southern Region was established in response to an identified need to support all ETC Project Officers in EU programmes and projects to support the delivery of sustainable regional development (including RSES and other regional initiatives) to the benefit of the region. The ETC network could provide a key mechanism for sharing knowledge across the region in terms of best practices, building partnerships and project consortium, signposting funding opportunities, stakeholder engagement, catalyst to collaboration between stakeholder such as academia and enterprise, targeted events etc.
- **Regional forums in dedicated sectors;** for example, the Renewable Gas Forum Ireland is leading the AgriBio-CNG initiative, which involves the coordination and development of a cluster of 6-8 anaerobic digestion biomethane plants in Munster. Similarly, Cork hosts Ireland's second-largest

cluster of IFS companies and the Cork Financial Service Forum (est. 2008) is driving the advancement of the industry. Other key stakeholder forums are used where possible, for example the All-Ireland Smart Cities forum.

Q: How can we enhance collaboration between industry and the higher education sector?

The Southern Region recommends increased direct and indirect measures to improve the impact of Public Sector R&D on SMEs and Increased policies aimed at increasing R&D efforts of domestic firms (encouraging global supply networks or other tech spill over), for example;

- Intensify existing collaborative efforts between start-ups, corporations, and academia. Particularly, fostering engagement and **collaboration via PoC funding** (de-risking testing and experimentation), tech transfer, work-based research, and better use of existing EI support to leverage new technologies into enterprises, while supporting start-ups in the scale-up phase.
- Support the establishment of **Regional Innovation Forums** in dedicated sectors and drive funding and resources towards the start-up of new multi stakeholder forums in sectors without any.
- Consider the formation of Regional "innovation districts"; geographic areas where leading-edge anchor research institutions and companies cluster and connect with start-ups, business incubators and accelerators.
- Align the priorities of existing innovation funding, (eg; DETE Disruptive Technology Fund) to the **regionally identified needs and existing research clusters** in the regions, perhaps using the fund to encourage mentoring, further clustering, and innovation districts.
- **Decrease the risks and costs of R&D for SMEs;** through alternative finance options using instruments for public private ownership.
- **Improve Human Capital development** by implementing the **Learning Region Action Plan** (LRAP); designed to support the region's continued transformation towards a knowledge-based and high value economy; the LRAP recommends additional training subsides or direct grants to SMEs that allow their employees to undertake skills development courses and highlighting the benefits of ETBI courses that are free of charge and have flexible timetables for employees. LRAP also recommends **policies to incentivise SMEs that allow employees undertake skills development courses**. The purpose of this would be to further ease the short-term financial concerns of SMEs while their employees are participating in relevant training courses.
- Providing **key information about emerging technological and commercial opportunities** to direct the conversation around the focus of knowledge diffusion. Specialisation must come first to provide this direction.
- Providing **fiscal incentives** for MNC's to collaborate with SME's
- **Knowledge diffusion** is a key enabler to our Region's economic resilience and growth. To develop a more resilient economy and society, the RSES recognises the value and necessity for Lifelong Learning, especially when Ireland is trading on the basis of being a knowledge economy. This proposition needs to be fully supported with funding to Higher Education Institutes, Education and Training Boards, the Regional Skills Fora, and actions to make life-long learning more accessible to our workforce. The SRA supports Lifelong Learning initiatives as essential components of a strong economy, as exemplified in Cork and Limerick's attainment of the UNESCO Learning City status and extend the UNESCO Learning City status to Waterford city, to create a regional knowledge triangle. To support a Learning Region and develop actions for strengthened education, training and life-long learning sectors in our Region, the SRA have provided leadership and coordination amongst stakeholders in these sectors to prepare a Learning Region Action Plan under RPO 190, which is at draft stage and in consultation with central government.
- In addition to greater direct investment, the S3 can tackle the lack of investment in public R&D by:
    - **Leveraging existing commitments**; for example, it will be imperative to ensure that government departments that are responsible for the **ERDF** scheme roll out and implementation **ensure alignment with the National S3**, and **actively request**

information on alignment with the S3 in the design of competitive calls for scheme proposals.

- **Providing incentives for Irish HEIs to become lead partners in EU funded research projects** (Horizon, Interreg etc) by: (a) providing structural supports for bidding expertise (staff salaries) in pre-award departments, with a focus on TUs and HEIs; (b) training and support to networks for peer to peer bidding and grant management expertise; (c) supports for building research relationships with other EU countries (funds available for proposal writing phases, allowing for travel and quality proposals) (d) continued support for National Contact Points as a knowledge source for EU funds
- **Build capacity to access competitive R&D funds across all stakeholders;** As noted in the RSES; with the introduction of competitive bids as part of Project Ireland 2040 and similar frameworks to access funds from sources such as EU programmes, there is a need to ensure that all research stakeholders, including local authorities and local stakeholders including SMEs have sufficient capacity to identify funding sources and to prepare professional and robust applications.

- Development of a **Learning Region Network with a dedicated co-ordinator** in each RA area: The emerging LRAP proposes a Learning Region Network with the overall objectives of improving access to education and learning opportunities and develop a culture of education, lifelong learning and skills development. This would require a Co-ordinator at a Southern Regional level but also partners at a local level to ensure active support and impact is achieved. The Learning Region Network should not be another layer in the established educational and learning framework of the SR. It will instead be a supportive and organic network that links people and communities together to focus on a strategic area (or areas) in joint initiatives and actions; thereby complimenting existing structures and activities of relevant bodies. Developing learning and leaving no-one behind are the underlining principles and motivation of the Learning Region Network. Development of a collaborative approach will be key for the delivery of the Learning Region Network, where Government (National, Regional and Local plus state agencies), Industry (and their representative bodies), Higher Education and Civic Society (e.g., PPN, Community based organisations) can share their knowledge and work together. Smart Specialisation is a key tool to strengthen collaboration, coordination and engagement bringing together key stakeholders (including researchers and industry) in a geographic area to identify the competitive advantages of a region with the view of developing economic opportunities. It is also a core part of EU cohesion policy. Stakeholders undertake an Entrepreneurial Discovery Process (EDP) to identify economic opportunities within their geographic area and evaluate how best to utilise these opportunities, particularly in sectors with the best potential. Consistency in approach from the of DETE with other government departments is required. The SRA regards a well-run Smart Specialisation and EDP process as being essential in delivering better innovation outcomes. Lack of commitment to this will have an adverse impact on regional development (DHLGH), research and innovation (DFHERIS) and enterprise (DETE).
- Governance should encourage co-ownership and sharing of the strategy(s) enabling **collaborative leadership.** The S3 platform recommends multi-level governance (MLG) models further supported by the findings of the COHES3ION Interreg Europe project focused on improvement of S3 governance through integrating a regional element. MLG encourages a move from traditional top-down governance models to more network like structures where-in hierarchies in decision-making are kept flexible enough to let each actor have a role and eventually take the lead in specific phases of the strategy, according to actors' characteristics, background, and capacities. This co-ownership and shared responsibility would encourage collaboration efforts for the shard success of S3 implementation.
- Support each Technological University in developing a **unique market-led research offering** building on the sectoral specialisations identified in the Regional S3. This removes ambiguity as to who to approach and collaborate with on particular sectors.

3.5. International collaboration on RD&I –

As a small, open economy, Ireland relies on external demand and international markets for sustainable and continued growth. The market for innovation and research is also global – international cooperation in research and innovation plays an important role in the development and sustainability of our innovation and research system. Some questions stakeholders might consider are:

Q: What areas of research or industry sectors does Ireland have an international competitive advantage in? How can we build on that advantage?

Resulting from an extensive collaborative analysis of the Southern Region the following have been identified as the top 10 high potential areas in the Southern Region[20], and where Ireland could have an international competitive advantage are:

1. Biopharmaceuticals and pharmaceuticals 4.0
2. Additive Manufacturing
3. Applied IoT
4. Efficient and sustainable manufacturing
5. Marine Technologies
6. Biobased economy
7. Fin Tech
8. Cybersecurity
9. Precision Agriculture and smart farming
10. Blue Energy

Industry sectors:

- **Agri-Food**: The agri-food sector in the SR is well-developed being home to world-class research centres of excellence and third-level institutes, leading the direction of change in the sector through collaborative research and innovation. Key players and companies in the Irish dairy industry are concentrated in region with the region also hosts to most specialist dairy farms in Ireland. Food for Health Ireland (FHI), a multi-million-euro project, has produced 4 new functional components from milk through the combined expertise from State Agencies (EI, Teagasc) and academia (UCD, UCC, UL). This advantage could be further enhanced. smarter practices. Programmes that facilitate the transfer of engineering and ICT skills should be developed.
- **Bioeconomy**:
    - Shannon ABC, an Enterprise Ireland funded technology gateway hosted by LIT and Munster TU, has significant expertise in bioresources detection, identification, characterisation, and valorisation, and collaborates with industry and other research centres to deliver this expertise in applied settings. •
    - The collective effort of the University of Limerick, UCD, TCD, NUIG, and Teagasc, brought about the establishment of the Bioeconomy SFI Research Centre (BiOrbic), one of the top bioeconomy research centres in the world.
    - The National Bioeconomy campus at Lisheen is a critical piece of infrastructure that will work with food companies and other sectors to develop biorefining technologies based on renewable biological resources. The Innovation and Piloting facility provides the national ecosys-tem with an opportunity to accelerate ideas to the market, helps to de-risk new technologies, attract further investment, and build international links.

[20] Regional Approach for development of a Smart Specialisation Strategy in the Southern Region, Bable, 2021

- Lisheen is one of only six regions in the EU granted the Model Demonstrator Region (MDR) status awarded by the European Commission, for the development of the bioeconomy by utilising domestically available feedstock such as biomass, waste, or CO2.
- The National Bioeconomy campus at Lisheen is a critical piece of infrastructure that will work with food companies and other sectors to develop biorefining technologies based on renew-able biological resources. The Innovation and Piloting facility provides the national ecosystem with an opportunity to accelerate ideas to the market, helps to de-risk new technologies, attract further investment, and build international links.

- **Blue Growth industries**
  - Ireland has a strong wave, tidal and offshore wind energy resource. This provides a unique opportunity to develop an indigenous ocean energy industry to become an international destination for testing and demonstrating ocean energy devices and marine sensors. Being home to state-of-the-art test sites the SR is in a strong position to advance this international competitive advantage
  - The Shannon Estuary has the largest wave energy resource and the best wind regime in Europe and is a unique infrastructural asset to the region
  - Research institutes include the Mobile and Marine Robotics Research Centre, hosted at the University of Limerick.
  - Potential of the major ports of the region to build offshore wind capacity
- **Energy**
  - The region has the best solar resource in Ireland.
  - Plentiful zinc resources in the Region could be used to produce zinc-air batteries and the University of Limerick is a global leader in battery research.
  - Shannon Energy Valley whose goal is to create a ‘world-class cluster’ of sustainable and renewable energy companies between Galway and Limerick
- **Life Sciences**
  - Manufacturing excellence in biopharmaceuticals is a hallmark of Ireland's success in the sector.
  - The PMTC (Pharmaceutical Manufacturing Technology Centre) based out of the University of Limerick has a clear vision to make Ireland the global hub of pharmaceutical process innovation and advanced manufacturing through applied research into advanced technology solutions.
  - The SSPC (Science Foundation Ireland Research Centre for Pharmaceuticals) centre in Limerick offers a state of the art Crystallisation, Isolation and Drying Test-Bed which is the first of its kind globally, a Mass Spectrometer to enable protein identification and characterisation fundamental to the understanding of cellular function, a Process Flow Spectroscopy
- **ICT Sector - Digital Industries**
  - The Propeller Shannon Accelerator programme is a unique aviation and travel-tech programme that support innovation and start-ups in B2B Traveltech, next-generation Airports for passengers, Big data, Aviation services, drones/UAVs, cybersecurity, satellite tech, and more. This is supported by the Shannon Group’s International Aviation Service Centre (IASC) and cluster.
  - WIT’s Walton Institute (formerly TSSG) is spearheading the development of next-gen digital technologies with the research groups: Emerging Networks Lab, Programmable Autonomous Systems, Mobile Ecosystem & Pervasive Sensing, Research Infrastructure & Testbeds; incl. the innovation centres SEE Space Network centre (with its Satellite Radio Communication testbed) and the Kilkenny Co-supported PACE centre (agri-tech).

What distinguishes smart specialisation from traditional industrial and innovation policies is the "entrepreneurial discovery" - an interactive process in which market forces and the private sector are discovering and producing information about new activities and the government assesses the outcomes and empowers those actors most capable of realising the potential (Foray, 2012; Hausmann and Rodrick 2003).

As reinforced by external experts Bable approaches to further specialise and build on the above listed sectors and improve their international competitiveness should be examined **sector by sector** through an iterative and reflective Entrepreneurial Discovery Process with all relevant stakeholders, however in support of this the following approaches support the implementation of a regional approach:

- **Attract expertise and funding for research**; Encourage and cultivate international collaboration across all stakeholders, private, public, and especially globally respected cutting-edge scientists and researchers and multi-country consortia. This can be achieved through participation in EU funded consortia led research and innovation programmes (Horizon Europe, Interreg), or private sector financing – thus bringing in more funds to the sector and establishing expertise and networks for global competitiveness.
- To attract this type of competitive international R&I funding, it is essential **to invest in research assets in the region;** The Irish Regions Universities, Institutes of Technologies, Colleges, and research centres are an instrumental asset in supporting our innovation potential, they provide a strong basis for future economic development. Research structures at regional level; It is evident from the RSES that all local authorities include a focus on strengthening the regional and interregional role of Education, Research and Innovation Capacity **through development of the Multi-Campus TUSE** in the provision of internationally recognised higher education and research opportunities which can facilitate transformational change and act as a key driver and enabler for sustainable future employment growth within Carlow and the Southern Region.
- Fostering modern approaches to R&I implementation can be beneficial, **e.g.: cluster policies** aim to put in place a favourable and connected regional business ecosystem in which new players can emerge and thus support the development of new industrial value chains and emerging industries. There is potential to **strengthen collaboration and clustering activities between foreign and Irish owned enterprises, HEIs and communities**.

Q: In what areas or sectors should we be concentrating our international research collaboration activity? What supports do these areas or sectors need to be competitive on a world stage?

As advocated through S3 there is a need for focus on sectoral strengths; in the case of the Southern Region, the following High Potential Areas have been identified:

1. Biopharmaceuticals and pharmaceuticals 4.0
2. Additive Manufacturing
3. Applied IoT
4. Efficient and sustainable manufacturing
5. Marine Technologies
6. Biobased economy
7. Fin Tech
8. Cybersecurity
9. Precision Agriculture and smart farming
10. Blue Energy

Again, it is important to note that each area requires a dedicated EDP with key stakeholder involvement to identify the supports to make them competitive on a world stage. However **the**

following supports could serve as a general guide for all sectors to improve international research collaboration activity; more PoC funding, better use of existing EI supports, supports for Regional Innovation Forums, supports for Regional Innovation Districts, better use and alignment of existing supports e.g.; DETE DTF, provide alternative finance options using instruments for public private ownership for SME R&D. Improve Human Capital development by implementing the Learning Region Action Plan (LRAP); provide incentives for Irish HEIs to become lead partners in EU funded R&I projects, build capacity to access competitive R&I funds across all stakeholders, including local authorities and SMEs.

Q. How can Ireland's regions use Ireland's international links and memberships to support their strengths and emerging areas of future opportunity?

Ireland's regions have a number of international links and memberships that can be leveraged to support emerging areas of opportunity:

- Bridging MNCs with SMEs and HEIs, e.g. the Southern Region hosts world-class multinational companies in the medical and health tech industry with sister sites in the US, Europe & Asia. **Hubs and research centres can capitalise on these links and such innovations should be promoted by government and S3**. Examples include the PMTC (Pharmaceutical Manufacturing Technology Centre) based out of UL, which is led by industry aiming to make Ireland the global hub of pharmaceutical process innovation and advanced manufacturing through applied research into advanced technology solutions. Or the National Bio-economy Foundation at Lisheen, Co. Tipperary which supports companies in bio-economy research and commercialization.
- Existing clusters should be supported and helped **to maximise international reach,** e.g.: **SportsTech** has more than 40 companies in Ireland already selling to international markets, it is **an emerging sector** with the highest potential in the following verticals: IoT, Sports Performance, Data Analytics, Broadcast, Wearable Tech, Fan Engagement, Sports eCommerce, Digital Media.
- Similarly, **Membership of IOs must be continued at national level** to ensure strong negotiation positions for Irish stakeholders on the international stage, and access to information training and cutting-edge research and standards across all sectors e.g.: EU, WHO, OECD, WTO, WCO, WFTU, WIPO.
- HEIs attract international students and researchers, developing a positive cycle of reputation and competitive funding. **Core funding for pre-award staff at HEIs** will ensure the region is attractive to international researchers offering inhouse knowledge on bidding and grant management, thus supporting leading PIs in the region, attracting more PhDs and Post-doctoral researchers. While some HEIs have basic expertise to win competitive grants, others have suffered from persistent underinvestment in research capabilities which has a negative effect on talent retention for high value/high growth industries.
- Continued participation in international European Consortia and **incentives for Irish partners to become leads**, for example in *Horizon Europe (including MSCA, ERC etc)* research consortia, but also with a focus on Interreg funds eligible to the NUTS 2 region's wider stakeholders for example *North West Europe* or *Interreg Europe* funding. International consortia projects offer immediate benefits through funded staff, costs of running the project as well as longer term benefits such as the exposure to new ideas, direct contact and learning from experts beyond national boundaries. Participation can be promoted through supports to HEIs – core funds for pre award staff, national funds for proposal development stage - and a focus on awareness of opportunities and **capacity building for grant bidding for the non-research stakeholders** (e.g.: local authorities, SMEs), as well as **continued support for National Contact Points** for European funds in Ireland.

- **Regional benchmarking at a European level**: Effective S3 policy making must look beyond the regional boundaries and consider the position of the Southern Region relative to other regions in Europe and its linkages to the global economy. This systematic comparison and benchmarking with other regions will allow for the identification of comparative advantages, references, and best practices, as well as possible patterns of integration with partner regions. For example, all regions classed as 'innovation leaders' have employment rates above 72% however the Southern Region falls below the EU average in employment rates highlighting a deficit that must be addressed.

Throughout this submission, the SRA have highlighted where Regional Planning and EU Projects divisions in our organisation partner to deliver RSES implementation on themes that directly align with the goals of S3.

It is a key advantage to DETE to leverage the unique position and experience of the Regional Assemblies through RSES development and implementation, EU Project partnerships and ERDF ROP development and management as a key stakeholder in the development and implementation of the national and regional S3 strategies.

Drawing from collaborative networks with stakeholders across the EU, national, regional and local level, the Assemblies are well positioned as a strategic bridge between national level enterprise RD&I priorities, regional priorities and local priorities, ensuring policy coherence and connection across all tiers.

EU Interreg Europe project collaborations with RSES implementation are yielding significant benefit and transfer of good practices to our Region which will assist our economic sectors and stakeholders in enterprise, RD & I, and these examples have included:

- Interreg Europe COHES3ION - Framework for Regional Approach for Development of a S3 Strategy in the Southern Region and Smart Region Definition and Framework for Smart Cities driving a Smart Region (http://www.southernassembly.ie/eu-projects/COHES3ION)
- Interreg Europe MARIE – Promotion of Responsible Innovation in Regional S3 and Innovation Strategies improving impact on the ground (http://www.southernassembly.ie/eu-projects/MARIE)
- Interreg Europe MATCH-UP - 10 Minute City and Town Framework (http://www.southernassembly.ie/eu-projects/MATCH-UP)
- Interreg Europe Blue Green Cities- Framework/Toolkit for implementing Green and Blue Infrastructure and Nature Based Design (http://www.southernassembly.ie/eu-projects/blue-green-city)
- Interreg Europe FIRESPOL addressing the financial barriers currently impeding greater investment in the generation and storage of Renewable Energy Sources (http://www.southernassembly.ie/eu-projects/FIREPSOL)
- Interreg Europe EMPOWER and a Regional Action Plan to Reduce Carbon Emissions by Monitoring Energy Efficiency in Social Housing (http://www.southernassembly.ie/eu-projects/EMPOWER)

In addition, elected members of our Assembly are members of the **EU Committee of Regions (CoR)** contributing to the development of strengthened EU policy on themes aligned to S3 from the Region's perspective and drawing down EU good practice and innovation in policy making, emerging from the EU. This membership has the support and resource of the Irish Regions European Office. Example priority areas for the CoR include:

- **Bring Europe closer to its people** and to reinforce European democracy at all levels of government. It aims to improve the way the EU works, ensuring its policies and programmes meet the real needs of citizens.
- **Building resilient regional and local communities by responding to the major transformations our regions, cities and towns are facing today** through a coherent, integrated and local European approach. Led by the UN's Sustainable Development Goals, the CoR identify solutions to ensure the EU sufficiently supports local and regional authorities in responding to future emergencies and addressing the societal transformations taking place in their communities.
- **Cohesion, our fundamental value: Place-based EU policies and** ensuring that economic, social and territorial cohesion is fostered and respected in all EU policies that affect people and their places of living (place-based policies).

The SRA's EU links, access to good practice knowledge, role in dissemination and transfer of knowledge, role in the development of frameworks and toolkits to assist actions by regional stakeholders, role in EU policy formation and role in development and managing the ROP 2021-2027 with the EU under themes aligned to S3 (smart cities and a smart region, lower carbon emissions, climate resilience and urban regeneration) position us strongly to support our Region's S3 sectors. **These links and networks support the SRA as a key stakeholder for DETE in national and regional S3 development and implementation.**

3.6. Actions to improve the national or regional enterprise research and innovation system

The RSES for the Southern Region articulates the role of research and innovation in enabling sustainable, competitive, inclusive and resilient growth. In line with Innovation 2020 and the EU's Horizon 2020, the RSES places emphasis on enhancing our regional innovation capacity. The RSES states that innovation activities should be the outcome of a complex co-creation process involving knowledge flows across the entire economic and social environment. By facilitating greater interaction between key economic participants and research and innovation, we can ensure greater enhancement of our Region's human capital and skills development - key components to regional economic growth.

Encouraging collaboration between HEI's, the Regional Skills Fora, ETBs, inter alia, of the Region presents the potential to develop skills and knowledge in areas most exposed to technological disruption. By supporting community and education providers, our Region can ensure that knowledge and skills are spread to all citizens to help address skills shortages and lifelong learning challenges. The research and innovation programmes underway in HEIs across the Region are positive ways to diffuse new skills, new technology and new learning opportunities across enterprises.

- **Enhance the role of Local Authorities in the enterprise R&I system**: The foundation of the innovation ecosystem is built upon knowledge creating and sharing across the quadruple helix model meaning local authorities also have a crucial role to play in this collaborative approach both in facilitating and adopting innovative methods. This could be coordinated by the Assemblies through the RSES implementation.
- **Recognise and reinforce the value of human capital** within the enterprise R&I system in delivering effective regional development as envisaged in Ireland 2040. The RSES states that human capital is central to the Southern Regions economic success and our social development, with the availability of well-educated, skilled and knowledgeable citizens acting as a fundamental driver of regional economic development and social progress. The S3 should emphasise the need to address

the critical human capital issues in the Southern Region which include the low rates of Lifelong learning.

- **Regionally balanced R&I enterprise system**: As highlighted in the Innovation2020 Midterm review; continued funding for the Regional Technology and Innovation Clusters associated with the TUs and IoTs will support this objective. S3 priorities should inform and direct the R&I agenda and within this it is important to recognise a balance between investments in frontier research and investments in applied research, allowing for an innovation friendly environment that facilitates interdisciplinary networks. Bridging the gap between frontier & applied research and industry is key for Irish social and economic development. When societal needs lead the R&I focus including that of enterprise scientific advances are translated into technology which is used to improve the lives of citizens.
- **Fiscal incentives for SME's**: Stakeholders stated during LRAP preparation that some SMEs are very focused on short term financial issues and are unable to focus on strategic concerns such as their employee's. It was therefore considered that SMEs require incentives (e.g. training subsidies or direct grants) that allow employees to undertake skills development courses to enhance innovation potential. SMEs accounted for 99.7% of the Southern Region's enterprise base, with the number of people engaged in these SMEs totaling 325,181 as of 2018. Such figures highlight the potential of providing direct financial incentives to SMEs in enhancing the Southern Region's economy.
- **Targeted investment in research and development**, **skills and digitalisation** is needed to address the lagging productivity of domestic firms by stimulating research and innovation and promoting cooperation between foreign companies, local firms and public research centres. DETE are well placed to promote this to the relevant agencies.
- **Mission Oriented Approach**: In line with the Mission Oriented approach to Horizon Europe, championed by Commissioner Mazzucato; R&I mission objectives in Ireland should not exist in a vacuum; the approach can align with EU investments in R&I, but **broader political commitment** will be critical to implement a successful mission. Missions should engage as much as possible with national industrial and economic recovery strategies, so that it is not about picking sectors or technologies but about picking problems to guide innovation across multiple actors in multiple sectors. This will lead to more complementary public investments from European, national, or regional programmes, and additional private investments, creating a catalysing effect on the chances for success. Capacity building on the concept of mission approach will need to be ensured across government departments and reach wide groups of stakeholders (quadruple helix). Missions must be well defined with concrete goals and milestones to avoid the grand scale overwhelming participants. A diverse set of different funding instruments can be applied, grants, prizes, new forms of procurement, and financial instruments. Rather than prescriptive specifications of projects as in the Research Prioritization approach, participants should be given flexibility to propose a variety of solutions for achieving the mission goals and intermediate milestones. This will nurture bottom-up experimentation, but in each case the lessons (and data) from the experiments should be collected, analysed and understood. There is potential to strengthen collaboration and clustering activities between foreign and Irish owned enterprises, HEIs and communities.
- **Gender parity** remains an issue in R&I in Ireland, SFI recently highlighted the lack of female research applicants to the Covid-19 Rapid Response Call indicating the impact of imbalanced family commitments. There is strong evidence of a leaky pipeline and poor retention for women in top level research jobs in Ireland, we therefore propose:
    - Initiatives such as the Athena Swan must be rolled out to the wider R&I sector including enterprise.
    - Incentivise the move from research to industry for women through targeted supports.
    - Demonstrating adherence to equality standards should be a pre-condition to funding, while considering that SMEs will need supports to facilitate this.

- More flexible working from home policies in research and industry, reflecting diverse needs and home situations
- Targeted grant supports for childcare facilities within research organisations, and incentives for the uptake of paternity leave
- Targeted grant supports for women and girls in STEM - from secondary school through to post-doctoral levels can help address the imbalance, promoting skills and creating jobs in the region. Ultimately this would foster economic growth. According to research undertaken by the McKinsey Global Institute, gender parity in the workplace could add up to 26% to the annual global GDP by 2525.

- **Support to increase the bidding capacity**: As stated in the RSES; with the introduction of competitive bids as part of Project Ireland 2040 and similar frameworks to access funds from sources such as EU programmes, there is a need to ensure that all research stakeholders, including local authorities and local stakeholders have sufficient capacity to identify funding sources and to prepare professional and robust applications. The post Brexit environment has left a gap where UK institutions tended to be the lead in H2020 or research heavy Interreg or other EU funding programmes. Irish institutions could be well placed to take the place as leaders in EU research grant funds. Incentives for Irish institutions to become lead partners could include:
  - Structural supports for bidding expertise (staff salaries) in pre-award departments at TUs and HEIs in collaboration with enterprise;
  - Training and support to networks for peer-to-peer bidding and grant management expertise;
  - Supports for building research relationships with other EU countries (funds available for proposal writing phases, allowing for travel and quality proposals)
  - Continued support for National Contact Points as a knowledge source for EU funds.
- **Enhanced supports for SME's**: An innovation gap exists between large multinationals and indigenous SMEs in Ireland. Irish SMEs will require enhanced supports to innovate to ensure their competitiveness and survival. The regional economy relies heavily on multi-national companies that specialise in areas such as Bioeconomy and Biomaterials, Electronics and Medical Technology, Pharmaceuticals, and Green Technology. Regional profiling and benchmarking with other European regions that share similar structural conditions to the Southern Region reveal that although the region has the highest GDP per capita nationally, it also has the lowest real growth rate of regional Gross Value Added (GVA). **This underscores Ireland's high dependence on Foreign Direct Investment and the influence of multinationals which inflate headline GDP figures, and points towards a need for more support towards indigenous growth**.

The RSES and regional approach to S3 have been recognised as presenting an opportunity to re-orient the country's R&I direction with a stronger place-based focus to address specific sectoral challenges and enhance the impact of funding with limited resources.

Q: Which RD&I initiatives have been successful for your sector/region? Which programmes should continue? Which RD&I programmes for enterprise are not working?

A recent report by Bable[21] provided an in-depth analysis of the Southern Region's existing RD&I initiatives to assess the level of innovation and critical mass in each of the key sectors; the following are some **non-exhaustive examples of RD&I successes and challenges in the Southern region**:

Successes/should continue:

[21] Regional Approach for development of a Smart Specialisation Strategy in the Southern Region, Bable, 2021

- **Agri food**; Food for Health Ireland (FHI), a multi-million-euro project, has produced 4 new functional components from milk through the combined expertise from State Agencies (EI, Teagasc) and academia (UCD, UCC, UL).
- **Bioeconomy:** There is a strong collaboration between the industry and academia which fosters cutting-edge advancements towards a globally competitive and sustainable bioeconomy.
- **Blue Growth Industries and energy:** The Southern Region is home to state-of-the-art test sites to support the translation of technology research from a laboratory environment to a real-world environment for ocean sensing and marine energy products and services. Research projects such as SmartBay, SmartCoast and Smart Catchment Projects funded by Marine Institute and EPA. The region has many companies in the SMARTOCEAN strategy cluster engaged in the development of high-tech marine products.
- **High Tech manufacturing:** The region hosts several research centres focused on manufacturing and is especially attractive to global technology companies due to its connectivity to Europe and North America through water and airways, the strong skills force, and the English language.
- **Life sciences:** There are several funding opportunities available within the sector that companies and research centres can leverage (e.g., Sláintecare Integration Fund, Enterprise Ireland's Innovation Vouchers and Innovation Partnerships, IRC Enterprise Partnership Scheme, European Funding, etc.)
- **International Financial Services (IFS):** The Southern Region has benefited from IDA sponsored international FDI and has seen some homegrown fintech successes.[22] A well-educated, highly skilled, flexible, internationally diverse, and multilingual pool of talent has been underpinned by the presence of top-10 business schools such as Cork University Business School (CUBS) within UCC, and the Kemmy Business School at UL. The NDRC (national startup accelerator pro-gramme), which has a history of supporting early-stage Fintechs, has already expanded its activities to Cork, Kerry, and Waterford (at ArcLabs). VC investments for Fintechs feeds in, for instance, from Kernel Capital and SOSV, two of the country's top ten VC investors -both based in Cork. Similarly, *the Fintech Foresight Group,* established by the Irish banking federation BPFI to harness new technology opportunities in both the Fintech and the wider IFS sector, could be instrumental to expand the linkages of the regional start-up ecosystem and enhance interaction with IFS companies, tech & research centres, and government, to identify opportunities for synergy. In addition, the *Regional Enterprise Plans* process could be a key policy response for supporting the development of regional strengths in the IFS sector and identifying potential clusters of fintech activity.
- **ICT Sector - Digital Industries**: The ICT ecosystem in the Southern Region is populated with a complete support network including research and technology centres, industry-led cluster groups, venture capital, tech incubators and accelerators, business innovation centres, and multiple entrepreneurial and coworking spaces.
- **Tourism:** The Shannon Propeller Accelerator programme is launching start-ups in the Travel Tech space, which is also drawing entrepreneurs from across the world, similarly, the Augmented Reality Tour Guide was developed in collaboration with UCC; the series of VR documentaries for Cape Clear's Island Ferry Tales project was developed by a start-up Wombat Media, and the 'quest' app was developed by travel-tech start-up Keyquest. **Key AR/VR competencies in the region** include the Extended Reality Innovation Lab (XRIL), at Nimbus Research Centre (Cork), and the Walton Institute Interactive Technologies Division (Waterford), which has a particular focus on the tourism sector with the use of AR/VR for heritage interactive experience and recently launched a Mixed Reality Innovation Lab.

[22] For more indigenous companies, see the recently updated All-Ireland Fintech Map 202120

Challenges/needs:

- **Agri food**;
  - Knowledge dissemination and collaboration between academia and the industry regarding new value chains should be improved.
  - Mentorship opportunities, accelerator programmes, and guidance with specialist commercial knowledge should also be promoted to support small and medium scale enterprises.
  - The difficulty in accessing funding and lack of awareness of existing supports are major barriers to scaling up at processing levels and the adoption of innovative technologies.
  - There is a need to address environmental challenges and for the development of more sustainable production processes in all aspects of the sector. There is a lack of technical capacity amongst local farmers to drive the transformation from traditional methods to smarter practices.
  - Programmes that facilitate the transfer of engineering and ICT skills should be developed.
  - Comprehensive high-speed rural broadband and road infrastructure should also be developed to support the adoption of SMART agriculture-based technologies and improve supply logistics.
  - Challenges that arise from the shift towards a low carbon economy is being observed in traditional industries like manufacturing and agriculture. Therefore, there is a need to build resilience, while supporting emerging opportunities in the sector.
- **Bioeconomy:**
  - There is a need to scale up biorefining and bioprocessing in the region to bring about significant economic impacts. Regulations should also be put in place to manage competing land uses and optimise “end-of-life waste”.
  - Due to the transdisciplinary nature of the bioeconomy and its wide array of applications, identification and prioritisation of sub-sectors are crucial to build scale in the ecosystem, improve the focus of programmes and projects, synthesise research, focus funding, and attract more foreign direct investment to the region.
  - Promotion of research-industry gateways, regional clusters, and working groups to lead the way in opportunity mapping for the sector, strategy alignment, identification of skills and monetary gaps, implementation of projects with the potential to increase activity, creation of a thriving environment for small and medium scale enterprises, and collaboration with international counterparts.
  - There is a need for enhanced seed funding in the built environment, as well as investor networks that are less risk-averse and take a long-term return view. Commercial investment in green solutions should also be incentivised to encourage more investment in sustainable solutions.
  - More youth engagement should be done to attract and retain young talents in the region. Lifestyle gaps across the region should also be bridged to encourage the retention of a qualified workforce. Education centred around sustainable living and circular economy should be introduced to kids in pre-school, primary, and secondary levels
- **Blue Growth Industries:**
  - Need to develop marine string spatial data analysis, modelling and decision support capabilities to create coordinated marine and coastal planning and licensing to maximise the potential for the Blue Economy.
  - A growing skills gap was identified as a challenge by regional stakeholders. These gaps are especially prominent for professions such as site operatives and installers.
  - A need for the major ports of the region to build offshore wind capacity was identified by stakeholders.
- **Energy sector:**

- Lack of RD&I and capacity for Energy storage: A major challenge for intermittent renewable energy production.
- The ESB administrative licensing and national grid systems are not conducive to research, there are fines when prototypes cannot meet production targets and extremely lengthy licensing procedures compared to other countries. E.g.: Interreg North West Europe AFLOWT, with Irish partner SEAI, is a project worth over €30m. The partners decided to move implementation from Belmullet, Co.Mayo to France due to Irish licensing delays[23].
- Need for research to find sustainable energy avenues within the existing infrastructure refers to energy aspects such as improving building efficiency, without the need to build entirely new infra-structure.

- **High Tech manufacturing:**
  - There is a need for upskilling and reskilling of workers through new and amended programmes in higher institutions, as well as training initiatives in the industry that address digital deficits among older workers. There is a need to make young people aware of the opportunities and generate interest in the sector.
  - There is a significant gap in investment into later stage Technology Readiness Level (TRL) innovations in Smart Manufacturing.
  - While the industry is strong in production, there is a need to invest in the design and R&D phase for risk reduction.
  - The industry is currently heavily reliant on FDI and needs to develop a strong indigenous ecosystem. The industry faces the challenge of effectively linking SMEs with MNCs.
  - There is a need for a strong cluster to support collaboration in the industry.
  - The connection and co-working between HEI and Industry need to be further strengthened.
  - Pressure on existing sub-suppliers of civil aircraft to meet growth levels is intensifying. There is therefore an opportunity to increase Ireland's market share in the global sub-supply chain of Aircraft Manufacturing.
- **Life sciences:**
  - There is a strong need for specialisation in the Life Sciences sector for the Southern Region to sustain economic growth and complement the other regions.
  - Despite strong academic research taking place in the region the application and commercialization of this research are slow.
  - There is a lack of funding for the proof-of-concept stage.
  - There is a need for investment and support in the supply chain and service industries supporting the life sciences industries.
  - The apprenticeship portfolio does not at present include healthcare, med-tech, and community engagement skills development.
  - With rapid digitalization, the existing workforce needs upskilling to make the most of the new technologies.
- **International Financial Services (IFS):**
  - The region needs resources, funding, and increased collaboration to keep pace with emerging European Fintech powerhouses. Through benchmarking with the 10 European Fintech Discovery Program hubs, the region could identify opportunities for differentiation, specialisation, and collaboration.
  - To exploit FDI's spillover effects, there is a need to intensify existing collaborative efforts between start-ups, corporations, and academia. Particularly, fostering engagement and collaboration via PoC (de-risking testing and experimentation), tech transfer, work-based

[23] https://www.nweurope.eu/projects/project-search/aflowt-accelerating-market-uptake-of-floating-offshore-wind-technology/news/aflowt-project-update/

research, and better use of existing EI support to leverage new technologies into IFS enterprises, while supporting start-ups in the scale-up phase.

- There is a need to link the fintech start-up and innovation ecosystem across the region in a more coherent way, to become Europe's Fintech entrepreneurial powerhouse, attracting start-ups from around Europe in all fintech verticals. (US Case studies: Boulder County, Colorado, and Des Moines, Iowa)
- It is necessary to support regionalisation objectives, as one of the three key horizontal pillars of the IFS2025 Strategy.
- Addressing skills needs through substantial actions with new industry-led specialised programmes: tailoring specific fintech short courses in emerging financial sectors like compliance, treasury, regulation, and BDM or developing Fintech apprenticeship programmes. Moreover, the creation of specialist talent in the emerging area of Sustainable Finance will be crucial to bridge the existing skills gap – building on the recommendations of Sustainable Finance Skillnet.
- As crypto assets are becoming mainstream, it is time to integrate fund management training with the evolution of digital ledger technologies, stablecoins, and increased interest in central bank digital currencies. This may start to open huge opportunities in the cross-border payments space.
- As a highly regulated sector, industry and regulation need to be in sync. By creating a platform where start-ups in Fintech, Insurtech, Regtech and related industries have a direct line to central regulators, interactions can be encouraged as they build their solutions. In this way, their innovative products and services are more likely to be effective, with market needs clarified through every stage of communication.

- **ICT Sector - Digital Industries:**
  - There is a need for enterprises to build distinctive strengths and ensure a degree of diversity, to prevent crowding out or inflationary effect as enterprises compete for essentially the same skills.
  - Need to address a lack of cohesion in regional engagement and goals for a common innovation ecosystem across the region. Funding for coordinated regional infrastructure in the identified areas, as well as the adoption of a cohesive roadmap for industries looking to innovate is there-fore required.
  - Need to internationalise the region, develop value chains, attract talent and investment, facilitate upskilling, and partnership innovation.
  - Building an entrepreneurial pipeline is key, alongside an increased focus on creating start-ups.
  - Start-up support and de-risking of POC (Proof of Concept) trials to foster engagement with local start-ups rather than the better-known international hubs. Active encouragement for collaboration via POC, tech transfers, work-based research, and awareness of existing EI Supports in this space to leverage these technologies into the FS / INS / REG enterprise
- **Tourism:**
  - Tourism, leisure, hospitality, and retail businesses are in survival mode since the pandemic started in 2020, Research and innovation in the sector could become a daunting challenge, given the lack of critical resources and dependence on state aid.
  - Possibility of local (digital) entrepreneurs already in search of market opportunities; if they could be presented with the right challenge and provided with the right resources, they could support the recovery and revitalisation of the tourism industry. Example: Dublin has a similar, but more densified community, which has already spawned highly valued travel-tech start-ups, such as TripAdmit, which raised €300K last year and aims to renew the Irish tourism industry.

Q: How do we generate a stronger, unified ecosystem approach to RD&I across the country to strengthen the visibility of our RD&I supports?

European Regional Development Fund (ERDF): By successfully implementing the ERDF enabling conditions on Smart Specialisation, Ireland can ensure strong governance and a unified approach to RD&I. There are currently two ERDF Operational Programmes in Ireland, covering Southern, Eastern and Midlands and the North Western Regions and managed by the SRA and NWRA respectively. There is a coherence to the development schemes design across the two regions as well as joint implementation through various government departments (e.g.: DFHERIS, DETE, DPER, DLGH to name a few).

Many of the schemes to be included in the 2021-2027 Operational Programme, require an S3 in place as an enabling condition and will therefore support the S3 implementation. The Operational Programmes designs are closely aligned with the priorities identified in the NPF and RSES, aiming to target regional strengths while promoting innovative and smart economic transformation – key requirements for any S3. "*Good governance of national or regional smart specialisation strategy*" is the title of the enabling condition for the receipt of ERDF and requires selected schemes, and reporting on their implementation, to address the seven enabling S3 factors across the two ERDF regions in Ireland:

The EC has set out clear rationale that **S3 priorities identified (national or regional) should determine R&I funding priorities** in order to 'build competitive advantage by developing and matching R&I strengths to business needs to address emerging opportunities and market developments in a coherent manner'. It is imperative that the R&I priorities should not just be focused on funding the same ongoing activities instead looking at how to enable the transformation of sectoral specialisms identified in the S3. External experts Bable conducted an in-depth sectoral analysis as the basis to identify specific specialisations on which the SR will base its R&I policies, interventions, and investment. To ensure parity and consistency across the three regions this exercise needs to be extended to both the North-West and Eastern & Midland Regions. This will inform and facilitate the focus of the R&I priorities enhancing collaboration potential between the three NUTS II areas thereby eliminating competition for funding. The ongoing engagement with Stakeholders through the EDP will build on this and host the dual purpose of facilitating engagement with stakeholders to gain the required understanding of research infrastructure needs and priorities.

Specific recommendations from the SRA include:

- Build on current infrastructure in place e.g., initiatives like the repurposing of the National Bioeconomy Campus, now critical infrastructure for food companies and other sectors to develop biorefining technologies based on renewable biological resources.
- Enhance the strong entrepreneurial support infrastructure of incubators, accelerators, and investors to address areas of concern such as poor performance in patent application, a key indicator of an innovative region. Determine what is needed to increase patent applications through the EDP engaging with the right stakeholders
- The region has significantly low performance in intellectual property which not only affects the region's competitive technological advantage but also undermines its ability to specialise in niche areas that require high technological innovation. In consultation activities, stakeholders across sectors repeatedly pointed out the need to **increase IP generation** and exploitation, either by expanding R&D infrastructure or intensifying industry-academia collaborations.
- Establishing the right **start-up support and de-risking proof of concept trials** to foster engagement with local start-ups rather than the better-known international hubs. Despite being consistently

ranked as an 'innovation leader' a regional benchmarking exercise highlighted that infrastructural gaps need to be addressed to position ourselves in the global market.

- **Implement a robust and iterative EDP process:** A required element of the ERDF conditions mentioned above, the S3 strategy must enable and empower local stakeholders to pursue the S3 development and the Entrepreneurial Discovery Process (EDP). In the Southern Region, the EDP process should be used to test the priority sector areas identified in the Bable report[24] with the local innovation ecosystem, especially the private sector. The further definition and review of these priority areas should be driven by the private sector as part of the next steps of the EDP process. The specialisation areas and their prioritisation *give an indicative direction for concentrating resources* and reaching out to the right stakeholders in the next steps of the EDP process.
- **Role of Regional Assemblies and the Regional Economic Spatial Strategies (RSES)**: Not only are the Regional Assemblies the Managing Authorities for ERDF implementation, and therefore extremely familiar with the S3 enabling conditions for EC reporting; they are building a governance model designed to facilitate regional consultation and implementation of schemes for regional development through their RSES. Key to effective S3 governance are good working relationships, experience and access to quadruple helix actors which the RSES governance already has in place.

The three Regional Assemblies offer a "unified ecosystem" approach to national development as they collaborate and compliment regional development work across the country, working together on ERDF design and ensuring coherence in approach to the implementation of their respective RSES.

Regional Assemblies, by nature, are extremely valuable for addressing regional and sub regional disparities, through a wide network and active collaboration with stakeholders in their regions. The RA work enhances the placemaking credentials of Irish regions and they are well placed to design and facilitate a clear vision for S3 approaches in their territories. The Regional Assemblies are developing a collaborative governance model to include cross-sectoral steering groups and will be building in regular monitoring and evaluation of regional outputs and indicators.

A well-run Smart Specialisation and EDP process must bring together collective knowledge from local and national bodies to ensure the most effective distribution of RD&I funds while moving away from a "one size fits all" development policy. Smart specialisation requires strengthening enterprise engagement with academic research. The implementation of such an approach requires collaboration of various government departments (DFHERIS, DETE, DLGH, DECC etc). At the moment, ERDF schemes are proposed by different government departments, who then communicate and ensure programming synergies under the facilitation of the Regional Assemblies. The Governance model utilised for managing the Regional Programmes could be relevant in this regard.

Q: How do we target RD&I spend in a way which maximises impact for the economy, and which addresses the market failure evident in low RD&I in the indigenous SME sector?

The following are the recommendations to target RD&I spend to maximise impact for the Southern Region. For details on how to target spend for each individual sector, please refer to the full Bable report "Key Areas of Technology Specialisation":

1. **Ensure up to-date analysis of bottlenecks for innovation diffusion, including digitalisation,** see SRA recommendations under the question on Innovation Diffusion. A shorter summary is provided here:

[24] Regional Approach for development of a Smart Specialisation Strategy in the Southern Region, Bable, 2021

- Facilitate collaborations between start-ups, corporations, and academia via PoC funding and better use of existing EI supports.
- Provide support to existing Regional Innovation Forums in dedicated sectors and funds for the start-up of new multi stakeholder forums in other sectors.
- Set up Regional "innovation districts".
- Align the priorities of existing innovation funding to the regionally identified needs.
- Decrease the risks and costs of R&D for SMEs; through alternative finance options using instruments for public private ownership.
- Improve Human Capital development by implementing the Learning Region Action Plan (LRAP) with a focus on SMEs staff.
- Leveraging existing commitments; request information on alignment with the S3 in the design of competitive calls for scheme proposals under ERDF.
- Providing incentives for Irish HEIs to become lead partners in EU funded research projects by: (a) providing structural supports for bidding expertise (b) training and support to networks for peer-to-peer bidding and grant management expertise; (c) supports for proposal writing phases (d) continued support for National Contact Points as a knowledge source for EU funds.
- Build capacity to access competitive R&D funds across all research stakeholders, including local authorities and local stakeholders and SMEs.

2. **Existence of competent regional/national institution or body, responsible for the management of the smart specialisation strategy**
   As the national institution responsible for the management of the S3 DETE have oversight at the national level however if the regional priorities are to be managed effectively, they must be driven at the regional level. As noted in the Bable report the S3 platform recommends the governance structure to have a dedicated management team, a Knowledge Leadership Group and thematic or project specific working groups. Findings from the Cohes3oin project and RSES governance could inform and support the governance for the regional S3. The RSES implementation offers a timely opportunity to embed management of the S3 at the regional level in collaboration with the REP's
3. **Monitoring and evaluation tools to** measure performance towards the objectives of the strategy;
   - Leverage the existing data sets in place through the Regional Assemblies as they monitor implementation of their RSES.
   - Work closely with ERDF Managing Authorities and Government departments responsible for ERDF scheme delivery to ensure alignment of indicators and data collection from the Implementing partners.
   - The European Commission's *Implementing Smart Specialisation Strategies Handbook* stresses the importance of having an effective monitoring system in place advising KPI's must identified to monito certain criteria. The complexity of the R&I landscape can make it difficult to measure progress effectively if not set out clearly from the start. Ideally regional indicators will be aligned with the RSES objectives and as such Bable have recommended a set of indicators that satisfy EC requirements aligned with RSES objectives, once agreed these could be rolled out to each of the regions reflective of their own objectives and priorities. See Appendix A for the list monitoring indicators reflective of the Southern Region S3 priorities aligned with the Regional Strategic Objectives
4. **Effective functioning of entrepreneurial discovery process (EDP); ensuring priority areas are reviewed and updated regularly to align with the changing market dynamics**
   The EDP is the defining element of the Smart Specialisation Strategy. The EDP is cyclical in nature and should not be viewed as an administrative exercise or a one-off activity. S3 requires an agile approach so the process should be iterative, highlighting the need to reflect on the priority areas

after an interval of time and update them to align with the changing market dynamics and regional ecosystem conditions. Regular monitoring of the activities and programmes followed by an evaluation of the impact is an essential feedback loop.

The work carried out by Bable and this consultation represent the first step in the EDP journey for the Southern Region. The next critical step is to further define these areas with the local innovation ecosystem and **develop individual transformation roadmaps**, outlining activities and programmes to enable the transformation of priority areas that garner the most traction into economic strengths. A transformation roadmap details all the rules and tools that the Southern Region will need to reach the prioritized goals, and it should provide comprehensive and consistent information about strategic objectives, timeframes for implementation, identification of funding sources, and tentative budget allocation. SRA recommend that a working group be established for each of the priority areas that would co-develop the transformation roadmap.

5. Actions necessary to improve national or regional **research and innovation systems –** see answers above in relation to Innovation Diffusion in relation to incentives for HEIs.
6. Actions to manage industrial transition – see section on Green Economy
7. Measures for international collaboration – see section on "International collaboration on RD&I", a summary is provided here:
    - Bridging systems for MNCs with SMEs and HEIs
    - Existing clusters should be supported and helped to maximise international reach,
    - Membership of IOs must be continued at national level
    - Core funding for pre-award staff at HEIs
    - Continued participation in international European Consortia and incentives for Irish partners to become leads – core funds for pre award staff, national funds for proposal development stage - and a focus on awareness of opportunities and capacity building for grant bidding for the non-research stakeholders (e.g.: local authorities, SMEs), as well as continued support for National Contact Points for European funds in Ireland.

4. Conclusions

The SRA strongly support DETE in the new Smart Specialisation Strategy adopting a more place-based approach through the inclusion of 'Regional Chapters' based on the NUTS II Regional Assembly areas. Focusing on the regional level allows us to build on the unique strengths and capabilities of each of our regions and build the capacity for cross-boundary collaboration. Further to this a regional approach to Smart Specialisation will allow us to leverage the strengths and capabilities of the regional ecosystem by concentrating resources on the further development of the identified high-potential activities to drive economic growth in each of the regions.

The regional articulation of the NPF through the RSES is a proven example of how this can be done to great effect.

In support of the points made throughout this submission the SRA would like to note and reinforce the following:

- Active stakeholder interaction throughout the process, from development to execution, is what sets Smart Specialisation apart from other policymaking. A **clear and shared regional vision** for regional development plays a critical role in ensuring long-term stakeholder engagement in the S3 process. Emerging from an extensive stakeholder consultation the SRA has an ambitious vision to become the most creative, innovative, greenest and liveable regions in Europe which could form the basis for defining the vision for the S3 further defined with the regional innovation ecosystem.

- **The Entrepreneurial Discovery Process** is the defining element of the Smart Specialisation Strategy. As previously noted, the EDP is cyclical in nature and should not be viewed as an administrative exercise or a one-off activity. Nor are they exclusive or closed processes therefore ongoing active stakeholder engagement must be built into the strategy development from the start. The initial stakeholder mapping exercise conducted by Bable will grow and evolve with the priorities. The SRA recommend DETE build on this initial mapping exercise through the ongoing EDP in collaboration with the REP managers and the SRA.
- Identifying the priority areas for the region is the first step towards developing the regional S3. The next critical step for the Southern Region is to further define these areas with the local innovation ecosystem and develop individual **transformation roadmaps**, outlining activities and programmes to enable the transformation of priority areas that garner the most traction into economic strengths. Further to the findings in the Bable report the SRA recommend that a working group is established for each of the selected priority areas to co-develop the transformation roadmap. Based on experiences from other regions, it is useful to appoint coordinators for each priority area (when possible, from both the economic and academic worlds).
- One of the key fulfilment criteria for S3 is a competent body responsible for management of the strategy however for effective implementation at the regional level a strong collaborative governance model must be established. The S3 **governance model** should encourage co-ownership and sharing of the strategy enabling collaborative leadership. The S3 platform recommends **multi-level governance** (MLG) models further supported by the findings of the work on the COHES3ION project which is focused on the improvement of S3 governance through the integration of a regional element. This shift in governance to network like structures allows each member an equal and active role with the opportunity to lead dependant on their strengths at each stage of the process. This 'network of leaders' facilitates boundary and border spanning collaboration. Regional structures such as the RSES through the Regional Assemblies and REP's could mobilise this locally.
- **Monitoring and Evaluation Mechanism**: S3 requires an **agile approach** so the process should be iterative, highlighting the need to reflect on the priority areas after an interval of time and update them to align with the changing market dynamics and regional ecosystem conditions. Regular monitoring of the activities and programmes followed by an evaluation of the impact is an essential feedback loop. Implementing a monitoring system that is easy to follow requires creating a system that is clear from the beginning with well-defined roles of responsibility. As the three RSES set out the goals and ambitions specific to their regions choosing indicators that are compatible with the strategic objectives of the RSES would ensure a clear and effective system. Bable have developed a suite of indicators to choose from in each of the KPI categories suggested by the EC's 'Implementing S3 Handbook' and connects them with the Regional Strategic Objectives. The SRA suggest agreeing with DETE the relevant indicators that could be built into the RSES monitoring model.
- **Responsible approach**: Innovation is essential for our enterprises to compete on the global market. It has the potential to change lives for the better however, there are also many examples of innovations that have reached the market only to reveal negative impacts. Responsible Innovation (RI) is an attempt to anticipate such negative impacts and to redirect innovation towards a model that reflects on impact from the start of product invention, design and production. RI is a relatively new concept and enterprises, particularly SMEs, are not always aware of it and of its potential benefits, or ready to apply it in their innovation processes. The RSES supports the RRI approach by recognising the value of engaging civil society and decision-makers with science and innovation to address regional and societal challenges further demonstrated through its extensive consultation process across the quadruple helix and commitment to addressing the grand challenges set out in the UN SDG's. Conducting research and innovation responsibly that not only answers questions and solves problems but is also in line with the ethical values and needs of society, must be a primary focus for government.

- The SRA strongly recommend that a similar macro-analysis of the North West and Eastern & Midlands regions is carried out following the methodology outlined in the framework developed for a regional approach to S3 for the Southern Region.

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The SRA as a key stakeholder welcome this consultation opportunity with the DETE on the new Smart Specialisation Strategy for Ireland.

A commitment to applying a regional dimension to Ireland's S3 is welcomed and needs to be strengthened to build sectoral strengths and opportunities in RD & I for the Region informed by local and regional knowledge.

A Regional S3 Framework will optimise the role of the Regional Assemblies in managing and co-ordinating RSES Implementation, European Regional Development Fund (ERDF) and Regional Operational Programmes (ROPs) to assist the work of central government under S3.

There are efficiencies to be gained by such collaboration as demonstrated by the SRA's initiative in the procurement of Bable through our partnership in the Interreg Europe Cohes3ion project to develop a Regional Approach for the Development of a S3 Strategy in the Southern Region, which has strongly benefitted this consultation process.

A Regional S3 Framework will also help to integrate the territorial dimension for cohesive S3 and provide a bridge between EU, National and Local policy through the regional tier.

The SRA are committed as a key stakeholder to help align policies, objectives and actions between RSES, ROP 2021-2027 and S3 implementation, which closely align. We trust the recommendations in this submission therefore are comprehensive and assist the process.

The SRA would welcome the opportunity to engage with the Department on this submission and are available for future consultation and clarities as required.

Mise le meas,

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David Kelly,

Director

Appendix A

Output indicators measure the type and level of direct output produced by funded projects. These are likely identifiable in the programmes contributing to the S3 actions and should be linked to specific policy measures.

Output Indicators

Output Indicator	Regional Strategic Objectives
Companies financed	1. Compact Growth; 5. A Strong Economy
Companies involved	5. A Strong Economy
New companies	1. Compact Growth; 5. A Strong Economy
Patents filed	5. A Strong Economy
Total investment	1. Compact Growth; 5. A Strong Economy
Researchers employed	5. A Strong Economy
New jobs in R&D	5. A Strong Economy
Research laboratories financed	5. A Strong Economy
Research laboratories involved	5. A Strong Economy

Result indicators measure the degree of achievement of the socio-economic objectives of the S3 strategies. These may be identifiable in the contributing programmes or may need to be tailored to the specific objectives of each S3 priority by the strategy designer.

Result Indicators

Result Indicator	Regional Strategic Objectives
Private R&D expenditure	5. A Strong Economy
Gross R&D expenditure	5. A Strong Economy
Labour market statistics	5. A Strong Economy
Number of new applicants/ beneficiaries in innovation projects	5. A Strong Economy
EU Regional Innovation Scoreboard	5. A Strong Economy
Sector-specific change of employment	5. A Strong Economy
Students in higher education in S3 domains	10. A Healthy and Learning Region; 11. Inclusive International Region
Export performance	5. A Strong Economy
Energy consumption	1. Compact Growth; 8. Low Carbon, Climate Resilient and Sustainable Society
GHG emissions from electricity	1. Compact Growth; 8. Low Carbon, Climate Resilient and Sustainable Society
Digitalisation of economy	2. Enhanced Regional Accessibility; 5. A Strong Economy; 6. High-Quality International Connectivity

Implementation indicators measure the actual state of implementation of the policies and related actions. These are likely identified already in the contributing programmes and should be defined for each policy measure.

Implementation Indicators

Implementation Indicator	Regional Strategic Objective
Value of funds allocated (regional, national, EU)	5. A Strong Economy; 9. Sustainable Planned and Infrastructure-led Development
Type and amount of contributions paid by public entities into policy implementation and related actions	5. A Strong Economy
Value of accepted investments from outside investors into policy implementation and related actions	5. A Strong Economy
Projects approved	1. Compact Growth
Number and type of beneficiaries funded	5. A Strong Economy

Structural Change & Specialisation indicators measure the absolute and relative changes taking place in the production systems comprised in each of the S3 areas according to the trajectories and transitions foreseen in the strategy for each S3 priority and the whole economy. These likely need to be tailored by the strategy designer to each specific objective.

Structural Change & Specialisation Indicators

Structural Change Indicator	Regional Strategic Objective
Patents per Specialisation Area (SA)	5. A Strong Economy
Change in number of inter-firm collaborations	5. A Strong Economy; 9. Sustainable, Planned and Infrastructure-led Development
Research grants in SA's	5. A Strong Economy
Number/value of research-business contracts per SA	5. A Strong Economy; 9. Sustainable, Planned and Infrastructure-led Development
Number/value of research-business contracts per SA as percentage of total	5. A Strong Economy; 9. Sustainable, Planned and Infrastructure-led Development
Number of innovative start-ups per SA	1. Compact Growth; 5. A Strong Economy
Number of innovative SMEs per SA	1. Compact Growth; 5. A Strong Economy
Degree of sectoral growth (companies, employees, turnover, investments, exports)	1. Compact Growth; 5. A Strong Economy

Context indicators provide a picture of the competitiveness of the regional economy, particularly in the areas of research and innovation and the production systems at large. These can likely be found in official statistical sources.

Context Indicators

Context Indicator	Regional Strategic Objective
Labour force participation rate	5. A Strong Economy
Export growth rate	5. A Strong Economy
R&D activity	5. A Strong Economy
EU Regional innovation scoreboard	5. A Strong Economy