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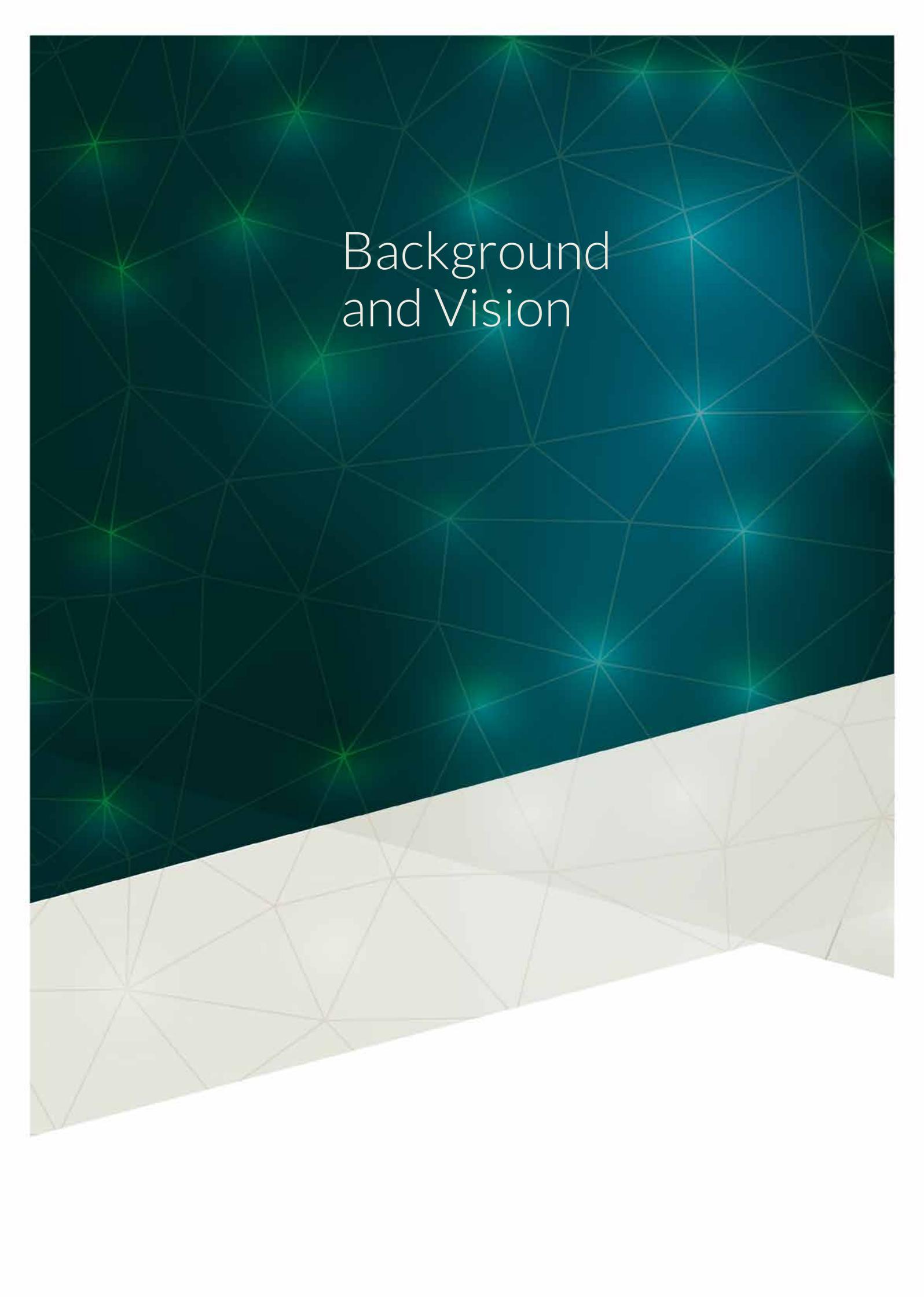
# National Smart Specialisation Strategy for Innovation 2022-2027

Executive Summary

Prepared by the Department of  
Enterprise, Trade and Employment  
[gov.ie](http://gov.ie)

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# Background and Vision

## Background and Vision

Innovation – the process of adapting from the old to the new – is the main source of economic growth and social progress. In recent years, innovation-led economic growth has been increasingly centred on technological change, digitalisation and environmental sustainability. Ireland’s economic policymaking has adapted to meet these new challenges head on with recent strategies published to address issues such as Climate Action, Artificial Intelligence, Industry 4.0 and Digital Engagement.

However, Ireland’s economic growth, while impressive overall, is uneven with some regions struggling to transition towards new growth opportunities. Regional productivity and innovation gaps highlight that digital adoption, knowledge diffusion and sustainable growth are by no means automatic.

To reduce these regional disparities, address economic challenges and deliver a better quality of life for all, it is important to link Ireland’s regional needs and potential with innovation policymaking. This is the basis for a Smart Specialisation approach – a bottom-up, place-based, dynamic process which brings together regional and national actors to identify opportunities and shape future policy direction. The National Smart Specialisation Strategy for Innovation 2022-2027 builds on this approach and highlights the range and depth of Ireland’s research and innovation activities, enabling greater levels of internal collaboration, while also allowing Ireland to present a more comprehensive picture of our activities internationally.

### What is Smart Specialisation?

Smart Specialisation is an innovation policy concept developed by the European Commission which aims to boost regional innovation, contributing to growth and prosperity by helping and enabling regions to focus on their strengths. This will promote broader benefits, including innovation-driven growth in regions and the promotion of sustainable growth models.

## Our Vision

Ireland's Smart Specialisation Strategy will embrace a regional approach to addressing Ireland's Research, Development and Innovation (RD&I) challenges. It will provide a 'bridge' between regional and national innovation strategy building and decision making, bringing coherence to RD&I planning for the benefit of enterprise and advancing the RD&I agenda regionally and nationally.

Our Smart Specialisation Strategy will be focused on achieving impact in several national strategic areas of real significance if Ireland is to advance the RD&I agenda at regional and national level and achieve delivery of a more digitally connected, greener Ireland, which serves all of our residents. These national strategic priorities are:

1. Digitalisation and digital transformation.

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2. Green transformation for enterprise.

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3. Innovation diffusion.

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4. International collaboration on Research, Development and Innovation (RD&I).

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5. Improving the national or regional enterprise research and innovation system.

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The preparation of Ireland's Smart Specialisation Strategy (S3) through extensive stakeholder engagement at regional, national and European level, along with our analysis of findings, has helped clarify a range of high-level strategic goals and deliverables that will be embraced in national policy and programmes, as well as in the development of new initiatives. The S3 engagement also examined regional economic and research strengths, along with emerging areas of opportunity.

This S3 will be monitored and implemented by a multi-level process involving national and regional stakeholders. Accordingly, a national implementation group responsible for the management of S3 will be established to ensure all enabling criteria are met at national level, and that S3 governance and monitoring structures, along with the role of regional interests within smart specialisation, are identified. This will also bring additional value to the S3 process by bridging any gaps between national and regional policies.

# Policy Context



## Policy Context

### National Economic Context for S3

Smart Specialisation operates within Ireland's existing economic and innovation context and builds its priorities on this national picture.

Ireland has one of the most open economies in the EU. Knowledge-intensive services and high-tech manufacturing are key drivers of the economy with the Irish Government steering this direction to generate and build on the country's economic success. Ireland has demonstrated a strong economic comeback since the 2007-2008 global financial crisis and is set to recover well economically post-COVID. Ireland is also the most R&D efficient country in Europe, generating more innovation output per euro of public funds invested than any other country<sup>1</sup>.

However, Ireland retains several key economic and innovation challenges which will need to be addressed over the coming period. Irish SMEs are widely reported as underperforming in RD&I compared to their EU counterparts with similar economies. This is especially the case for SME productivity, understood to be lacking in impact relative to RD&I investment, although a positive change was noted from 2018 to 2019. There is a heavy dependence on relationships with, and performance of, multinational companies (MNCs). The Dublin and Cork agglomerations very strongly outperform the country's wider economic and RD&I performance with firms outside of Dublin and Cork less likely to introduce product/service innovations. Additionally, the negative impact of the COVID-19 pandemic has highlighted longer term structural changes facing the workforce, such as digitalisation and sectoral shifts.

Other issues include Ireland's sensitivity to developments in global value chains given its comparatively high dependence on foreign-produced inputs in domestic production of goods for exports; Ireland's vulnerability to external shocks, such as changes to the global corporation tax regime and the ongoing impact of Brexit; and ongoing challenges with digitalisation. Despite a decrease in greenhouse gas emissions by 4.5% in 2019, the figures indicate that Ireland will exceed its 2019 annual EU emissions allocation by 6.98Mt which makes it highly unlikely that it will meet its overall 2020 targets, even considering the impact of COVID-19 on emissions in 2020.

These issues are meaningful at both national and regional level. This makes resilience planning all the more important, not least in refreshing the strategic framework underpinning the country's RD&I approach and S3.

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1. Shaping Our Future - Science Foundation Ireland Strategy 2025; Eurostat - Government budget allocations for R&D (GBARD) 2021

## National Innovation Context and RD&I Policy Priorities for S3

Ireland has increased its investment in RD&I over the past decade, while also introducing a range of measures to improve commercialisation of research and build strong linkages between the higher education sector and enterprise. Ireland's overall investment in R&D has increased by 79% from €2,564 million in 2011 to an estimated €4,595 million in 2020. Public expenditure on R&D is increasing and rose to €866.8 million in 2020, representing an increase of €148 million since 2016. Government allocations for 2021 are estimated at €949.1 million, which will be the highest level of public expenditure on R&I in the history of the State. However, Ireland is ranked well below the EU average for Government Budget Allocations on R&D (GBARD) as a percentage of Government Expenditure. The gap between Ireland and the EU average in the European Innovation scoreboard over the past decade has also widened, in particular between Ireland and the innovation leaders.

Relevant strategies and plans with national and regional focus include Impact 2030: Ireland's Research and Innovation Strategy, the National Development Plan, the National Economic Recovery Plan, Enterprise 2025 Renewed, SME and Entrepreneurship Growth Plan, Harnessing Digital - The Digital Ireland Framework, the National AI Strategy, Industry 4.0 Strategy, Our Rural Future: Rural Development Policy 2021-2025, the Regional Enterprise Plans, the Regional Spatial and Economic Strategies and the Climate Action Plan 2021. Ireland's S3 provides a framework that leverages these strategies and plans, along with their associated stakeholder engagement channels and implementation structures, at different spatial levels.

In general, given Ireland's relatively small geographic scale, along with the key focus on output excellence and maximising economic and societal impact, our R&D infrastructure priorities and investment strategies have been set at a national level. However, important facilities, such as the new Technological Universities, Technology Centres, Technology Gateways and Research Centres, are located across Ireland and support regional strengths and future opportunities. S3 identifies the distinct strengths and areas of opportunities that derive from these regional networks with a bottom-up perspective.

## European Context for S3

Smart Specialisation was developed in 2007 as a European research and innovation policy approach in the context of the European Research Area (ERA) with the objective of spending 3% of EU GDP on R&D. Approaches to Smart Specialisation have developed over the years with guidance and strategic tools developed by the European Commission to assist countries and regions to identify their strategic innovation priorities. S3 has several important complementarities with EU programmes and policies. These include EU Cohesion Policy, the National Recovery and Resilience Plan, the European Green Deal and Horizon Europe.

### European Fulfilment Criteria for S3

Since the 2014-2020 programming period, developing a Research and Innovation Strategy for Smart Specialisation has been a prerequisite to receive funding from the European Regional Development Fund (ERDF). Accordingly, it is imperative that S3 meets the criteria for acceptance by the European Commission. The fulfilment criteria for S3s during the 2021-2027 cycle are set out in the European Commission's Cohesion Policy legislative package and are summarised below:

1. Up-to-date analysis of bottlenecks for innovation diffusion, including digitalisation;

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2. Existence of competent regional/national institution or body responsible for the management of S3;

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3. Monitoring and evaluation tools to measure performance towards the objectives of the strategy;

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4. Functioning of stakeholder co-operation (Entrepreneurial Discovery Process);

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5. Where relevant, actions necessary to improve national or regional research and innovation systems;

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6. Where relevant, actions to manage industrial transition;

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7. Measures for enhancing co-operation with partners outside a given Member State in priority areas supported by S3.

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This S3 methodology has been designed around fulfilling these goals.

The European Commission has stipulated that S3 should determine RD&I funding priorities for ERDF. It is important that the identified RD&I priorities are novel and do not focus on funding the same ongoing activities, instead looking at how to enable the transformation of sectoral specialisms identified in S3.



# Methodology

## Methodology

Ireland used a two-stage consultation process (entrepreneurial discovery process) for S3. At a regional level, Smart Specialisation has been integrated as a thematic area in the consultation process to develop the new Regional Enterprise Plans (REPs) to 2024 and is a part of the statutory Regional Spatial and Economic Strategies (RSEs). The stage-one consultations took place as a part of the REPs process in the nine NUTS 3 areas, giving local insights into regional priorities. The stage-two online consultation engaged key innovation stakeholders who may not have been represented at the REPs Steering Committees and provided broader insights. Numerous recent studies and policy documents were also considered in the context of this strategy. S3 draws together the relevant findings of these policies, as well as the insights gained during the two-stage consultation process.

This process was overseen throughout by a steering group of key Government stakeholders, providing governance of S3 during strategy creation. The steering group's role included ensuring that all the criteria for S3 were met, identifying S3 monitoring structures, along with regional and national interests within S3, thus bridging any gap between national and regional policies.

# Analysis and Findings



## Analysis and Findings

In line with the fulfilment criteria set by the European Commission, the following have been identified as the national strategic priorities for S3 (the industrial transition aspect of the requirements being split into digital transformation and green transformation):

1. Digitalisation and digital transformation (addressing fulfilment criteria 1 and 6);
2. Green transformation for enterprise (addressing fulfilment criterion 6);
3. Innovation diffusion (addressing fulfilment criterion 1);
4. International collaboration on RD&I (addressing fulfilment criterion 7);
5. Improving the national enterprise research and innovation system (addressing fulfilment criterion 5).

### Digitalisation and Digital Transformation

Digitalisation refers to the use of digital technologies, data and applications to deliver scale, productivity and innovation advancements in both established and emerging sectors. Ireland has, in recent years, been a strong and consistently improving digital performer in Europe. Ireland ranks fifth out of 27 EU Member States in the 2021 Digital Economy and Society Index (DESI).

Challenges to digitalisation include encouraging greater investment by enterprises in research, development, innovation and digital skills. It also requires new business strategies to guide digital transformation, as well as forming specialised teams to exploit opportunities that will arise.

There are numerous policies and initiatives that already support digitalisation in Ireland. These include the National Broadband Plan, Industry 4.0 Strategy, the National AI Strategy, the National Cyber Security Strategy 2019-2024, the National Recovery and Resilience Plan, the CAP Strategic Plan 2023-2027, the upcoming European Digital Innovation Hubs, numerous EI programmes, the Disruptive Technologies Innovation Fund, EI/IDA Technology Centres and EI Technology Gateways, SFI Research Centres, Tyndall National Institute, the EuroHPC Competence Centre, the Quantum Learning Platform and the nine Regional Skills Fora

### Consultation Findings

There was overall agreement that much remains to be achieved to harness the potential of digital technologies in the manufacturing sector and among SMEs with many organisations lacking the digital skills necessary to lead in the adoption of technologies or the ability to act as digital-change leads. There is also room for further enhancing digital adoption, innovation, and entrepreneurship across enterprises, both large and small. A key challenge which may emerge will be to ensure an appropriate pipeline of skills and expertise to meet current, as well as future, labour market demand in emerging technologies and sectors.

In general, stakeholders felt that while there were considerable public supports in the area of digitalisation, there needed to be greater focus on digital skills and simplifying the range of offerings available to enterprise. Specific proposals, such as regulatory sandboxes, the upcoming European Digital Innovation Hubs and the new Construction Technology Centre, were also proposed and discussed.

It is felt that further access to digital opportunities must be promoted with enterprise engaged through meaningful mechanisms to ensure the delivery of these actions. There must also be investment in initiatives and strategic, integrated infrastructure which will support further understanding, technology diffusion, skills and training development, along with research commercialisation to enhance innovation and employability across sectors and regions.

### **Supporting Ongoing Digitalisation and Digital Transformation with S3**

In the context of Smart Specialisation, where national initiatives are designed to harness regional strengths, as well as to capitalise on opportunities of convergence between dissimilar industry sectors, it is imperative to have well-mapped operational boundaries and clearly defined mandates among stakeholders. Clustering initiatives offer a great deal of potential to act as catalysts for business growth through the formation of business-to-business, as well as business-to-RD&I centre initiatives. The national network of RD&I centres offers a variety of resources across the technology readiness level (TRL) spectrum while Government agencies offer support mechanisms to financially de-risk strategic investments. To realise the goals of S3, it is essential to have defined mandates and co-ordination surrounding the mechanisms designed to harness the potential opportunities of digitalisation.

These mechanisms will include Future Manufacturing Ireland, clusters, European Digital Innovation Hubs, remote working hubs and the goals of the actions of the AI strategy. Improved co-ordination between these existing mechanisms and new supports financed by ERDF will promote the adaption and deployment of digital technologies.

### **Green Transformation for Enterprise**

In 2018, Ireland had the third worst emissions of greenhouse gases per capita in the EU at 12.6 tonnes of carbon dioxide equivalent per capita. Ireland's emissions were 53% higher than the EU 28 average of 8.2 tonnes<sup>2</sup>. The enterprise sector is responsible for 12.9% of Ireland's total greenhouse gas emissions, the majority of which are accounted for by large energy-using companies (alumina, cement, food, pharmaceuticals) operating in the EU emissions trading scheme (ETS)<sup>3</sup>.

The Department of Enterprise, Trade and Employment (DETE) contributes to Government targets for greenhouse gas emissions from 2021 to 2030 and to achieving net zero emissions by 2050. The Climate Action Plan 2021 outlines steps to reduce emissions from the enterprise sector as part of its commitment to achieving a net zero carbon energy systems objective.

As part of its regional development strategy, DETE and its agencies will encourage new sustainable investments in the regions and promote the growth of entrepreneurial activity with a focus on the green agenda. As part of the development of the nine Regional Enterprise Plans to 2024, climate action and transition to a low-carbon economy were key themes at stakeholder consultation in each region. In addition, the National Recovery and Resilience Plan aims to contribute to a sustainable, equitable, green and digital recovery effort. This will be achieved through grants from the Recovery and Resilience Facility to drive actions such as accelerating the decarbonisation of the enterprise sector and a National Grand Challenges Programme which will address climate change.

By 2030, Ireland will have taken significant steps to address the climate crisis, which threatens our safe future on this planet, by more than halving our greenhouse gas emissions over the course of the decade.

In recent years, several initiatives have been developed to support enterprises in their green transition. These are not only delivered by DETE and its agencies, but also by the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS), the Department of the Environment, Climate and Communications (DECC) and the Department of Agriculture, Food and the Marine (DAFM). Some of the more notable programmes for enterprise RD&I include various EI programmes,

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2. CSO Environmental Indicators Ireland 2020

3. Ireland's Final Greenhouse Gas Emissions 1990-2020 - Environmental Protection Agency

including the Climate Enterprise Action Fund; EI/IDA Technology Centres and EI Technology Gateways, including the Dairy Processing Technology Centre, IMR and CREDIT; SFI Research Centres, including BiOrbic, MaREI and VistaMilk; LEO supports, such as Green for Micro; the Department of the Environment, Climate and Communications Climate Action Fund, the Sustainable Energy Authority of Ireland Energy Academy, Sustainable Energy Authority of Ireland Grants and tax incentives, Skillnet and Springboard+ training; and Bord Bia's Origin Green. In addition, the recent third call for the Disruptive Technologies Innovation Fund (DTIF) included "Economic Impact and Sustainability" as a new criterion for selection.

### Consultation Findings

All submissions agreed Ireland must develop a more environmentally sustainable economic model. With increased investment and smart targeted measures, Ireland has the opportunity to become a global leader in sustainable enterprise and green innovation.

Several submissions highlighted renewable energy production as a main area of opportunity for regions. In the long term, several submissions saw significant export opportunities in this area with, for example, the distribution of Ireland's future surplus offshore wind supply to mainland Europe, as well as hydrogen generation and storage at international scale. The need for investment in RD&I to address areas where solutions do not already exist is also important as adequate investment will lead to new industries of the future. These areas include geothermal energy, energy management and storage technologies, hydrogen production plants, a decarbonised and climate-resilient agrifood industry for sustainable food production, autonomous vehicle development, sustainable construction, and the circular economy.

Nonetheless, several challenges to the green transition are identified in S3 and elsewhere. These include the cost of decarbonisation measures, lack of knowledge and the low-carbon economy skills deficit. Measures proposed to address these challenges include targeted RD&I, financial incentives and new training opportunities. Other supports referred to in submissions included leveraging existing industry clusters and expertise to help businesses develop new circular products and services, as well as directing research into ways of reducing the costs of viable but prohibitive technological solutions to environmental challenges such as hydrogen and advanced biobased products and fuels. On a more local scale, it will be important to harness the potential for commercial and community renewable energy projects which can provide significant benefits for local communities and enterprise from providing low-cost energy to enhancing economic competitiveness.

### Supporting Ongoing Green Transition with S3

In the coming years, the accelerating impact of greenhouse gas emissions on our climate will significantly alter the way all global economies operate with such trends requiring policymakers to deliver major policy and legislative changes that will facilitate a low – and eventually – a zero-carbon future. As a result of such trends, it is likely that the low-carbon economy and its associated sub-sectors will be uniquely positioned to achieve critical mass within the next seven years. The green transition for enterprise is a cross-cutting priority and, in particular for Ireland, it will cut across sectors and borders.

In order to support this, S3 will assist leveraging opportunities for funding through the next ERDF programmes 2021-2027 to give strengthened financial support to enterprises in reducing their carbon emissions and integrating smart technologies for lower carbon processes. It will also support enterprises to operate from lower carbon buildings (retrofitting), integrate green infrastructure and nature-based design solutions within their property and site assets, as well as developing and accessing skilled workers to work within green industries.

S3 over its lifecycle also supports the goals of several other strategies and programmes. These include Our Rural Future: Rural Development Policy 2021-2025, Food Vision 2030, the National Recovery and Resilience Programme, the EU Just Transition Fund and the Climate Action Plan 2021. S3 also recognises the opportunities presented for all-island collaboration in this area and the potential of regions to collaborate in cross-border green transformation activities.

### **Innovation Diffusion**

Innovation does not only take place by creating knowledge, for instance through research and development, but also by learning from others. Such learning processes enable the diffusion or transmission of innovation which can, in turn, help companies, regions or countries to catch up to higher productivity levels. Innovation diffusion is of particular importance for SMEs and start-ups and reflects the process through which these firms gather knowledge, information, and innovations from outside and use them to introduce their own innovative products or processes. It is, therefore, of critical importance to the goals of S3.

Innovation diffusion is supported by underlying framework conditions, including the standards and regulatory environment supported by NSAI, the intellectual property environment, access to financial support, RD&I infrastructure, EI/IDA Technology Centres and EI Technology Gateways, EI Campus Incubation, SFI Research Centres and National RD&I Institutes, Teagasc Pilot & Demonstration facilities (for example, Moorepark, Grange, Ashtown, Oakpark), intermediary organisations (including EI, IDA, KTI, LEOs, SFI, the National Digital Research Centre and clusters and business networks) and channels (including academic-business collaboration, researcher mobility and knowledge intensive business services).

Despite these supports, barriers remain to innovation diffusion in Ireland. These include lack of collaboration between indigenous enterprises and multinational companies in RD&I; low level of investment in R&D activities by indigenous enterprises; proportionally low levels of public R&D expenditure; lack of awareness of the R&D tax credit initiative and RD&I supports among SMEs; and the complexity of the RD&I support environment.

### **Consultation Findings**

All submissions agreed that, generally, there appears to be a good relationship between higher education/research institutions and MNCs. However, several additional supports and measures would further improve this environment. These include supports extended to increase the capacity of the third level sector to engage in knowledge transfer activities; a strong talent pipeline; multiple channels for collaboration; and greater collaboration between MNCs and indigenous SMEs, including through clusters.

Other measures identified include the continued funding of Technology Transfer Offices (TTOs) in the HEIs under the Technology Transfer Strengthening Initiative (TTSI); increased use of national template agreements to simplify and speed up contracting with HEIs, as well as bringing more consistency for companies and innovators; supporting the collection and publication of information on the facilities, equipment and supports available to companies to access within the third level and State-funded research base at national and regional level; the need to orchestrate existing and emerging capacities in regional areas and to raise the profile nationally and internationally; continuity of industry-academic collaborations beyond a completed project to help companies to bring a project's innovations to market; and the expansion of R&D tax credits to cover a wider variety of innovation activities.

### **Supporting Innovation Diffusion with S3**

Through S3 national implementation group co-operation, developing new funding instruments through ERDF and feeding into Impact 2030: Ireland's Research and Innovation Strategy, S3 will stimulate enhanced innovation diffusion and represent the specific sectoral RD&I needs of the regions in national conversations.

The S3 national implementation group will work with DFHERIS towards the co-ordination and scaling of research institutions in Ireland in order to increase capacity, supporting Knowledge Transfer Ireland (KTI) through ERDF in embedding knowledge transfer within the public research system and promoting the need for developing entrepreneurial and research skills to support commercialisation of RD&I.

### **International Collaboration for RD&I**

International co-operation maximises the impact of international and national investment in research and innovation. It contributes to the development of Ireland as a research and enterprise partner, underscoring and enhancing the excellence of our research and innovation system and facilitating engagement with the Irish diaspora. A key plank of Ireland's engagement in international co-operation is participation of its researchers and enterprise in the EU Framework Programmes for Research and Innovation. Ireland has performed well in winning competitive funding under these Programmes, the majority of which is secured by our HEIs, with the balance being won by enterprise and public bodies.

DFHERIS has policy responsibility for the majority of Ireland's international RD&I collaboration initiatives. New metrics, targets and actions for these initiatives are set out in Impact 2030: Ireland's Research and Innovation Strategy.

There are numerous supports and programmes that engage in international and collaborative endeavours and support enterprises and researchers in their efforts to do so. These include participation in the EU R&I framework programmes, including Horizon Europe and Interreg Europe; bilateral country co-operation, including the US-Ireland Partnership; a variety of all-island initiatives and agencies, including InterTradeIreland, SFI programmes, HEA programmes, INTERREG VA and PEACEPLUS; a range of programmes that target enterprises, including EUREKA, the European Space Agency, the Digital Europe Programme, European Digital Innovation Hubs, EuroHPC, EuroCC, the European Cluster Collaboration Platform and Important Projects of Common European Interest (IPCEIs).

Ireland is also a member of several international research organisations including the European Southern Observatory, the European Molecular Biology Laboratory, the European Molecular Biology Conference, COST, CECAM, EOSC, ELIXIR and LOFAR.

### **Consultation Findings**

In general, submissions were positive about Ireland's competitive advantage in international collaboration on RD&I. Several submissions highlighted how important it will be to concentrate on areas which will be important for Ireland in the future such as climate change, offshore electricity generation and decarbonisation, along with other areas which will have significant international implications such as quantum engineering and microprocessor production. Increased participation by Irish enterprise in IPCEIs in cutting-edge sectors was promoted in several submissions.

The need was highlighted for Ireland to embrace a greater diversity of funding and co-funding options in international research collaboration, particularly with the recent agreement on an EU recovery budget of €1.8 trillion earmarked to support investment.

### **Supporting International Collaboration with S3**

It is intended, over the lifetime of this strategy, that the S3 national implementation group will work to identify opportunities to collaborate and build synergies with other countries in the enterprise RD&I space. For the first time, the S3 national implementation group will bring together regional and national policymakers in the enterprise RD&I space, thus bridging a previous gap in Irish policymaking. It is intended that this will lead to better and more coherent outcomes for Ireland's participation in EU and international programmes and that regional level recommendations will feed up into the national policymaking space.

### **Improving the National Enterprise Research and Innovation System**

Ireland is considered a strong innovator<sup>4</sup>; however, there is significant room for improvement. The country continues to lag other EU countries in the level of investment in RD&I and there is a significant innovation gap between large MNCs and indigenous SMEs. There is scope to improve the innovation potential of Irish SMEs by addressing some of the hampering factors to RD&I activity, which can include lack of funds, innovation costs and lack of skilled employees. Even though grant aid exists, innovation policy emphasises tax credits to stimulate firm-level R&D investments. These tax credits are effective but might not be as useful to start-ups and innovative young firms in emerging sectors. There may be other tools needed such as innovation sprints, loan guarantees, risk finance instruments or initiatives for developing innovation capabilities. This is an active policy and programming space in Ireland which has seen the development of several new funding initiatives such as the Irish Innovation Seed Fund Programme and the Brexit Impact Loan Scheme. Improved RD&I grant initiatives could be explored which would also address low Government R&D funding levels. Recent, novel RD&I grant initiatives, such as the Disruptive Technologies Innovation Fund, have bolstered Ireland's direct funding intensities. The popular take-up of such instruments demonstrates the demand in Ireland's economy for such modes of intervention.

### **Consultation Findings**

Submissions agreed that, while Ireland is considered a strong innovator in the EU context, it falls behind other EU countries in terms of the level of investment in RD&I. In short, public expenditure on RD&I has not kept up with increasing business investment in the area, resulting in Ireland scoring significantly below the EU average for Government investment in research and innovation. Furthermore, the COVID-19 pandemic brought the need for greater investment in the research ecosystem into sharp focus.

The driving forces identified in the submissions which could be used to generate a stronger and more unified RD&I ecosystem are the TTOs and regional Research Performing Organisations (RPOs). Submissions noted the need to bring together large companies, SMEs and HEIs to identify common areas for research and development; collaboration on shared innovations when they are developed; an extended system of mentoring of SMEs by larger firms; the development of supply-chain partnerships; and more comprehensive funding mechanisms. Several submissions placed an emphasis on cross-collaborative approaches to RD&I with policymakers, research institutions, academia, communities and industry to address cross-sectoral areas such as enterprise, energy and transport. Cross-disciplinary collaboration could best be achieved through the creation of hybrid innovation clusters and hubs.

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4. European Innovation Scoreboard 2021

Many submissions highlighted the reasons for the low uptake of RD&I in the indigenous SME sector. Numerous challenges were highlighted including long-term sustainability, lack of awareness, the focus on a firm's immediate survival, a lack of dedicated personnel and time on the part of senior management, as well as concerns over costs against return and loss of market share. In turn, potential partnerships between SMEs and HEIs were largely untapped. It is also difficult for smaller businesses to navigate the research landscape in Ireland and to understand how they might benefit from the wealth of intellectual property (IP) and expertise on offer in RPOs.

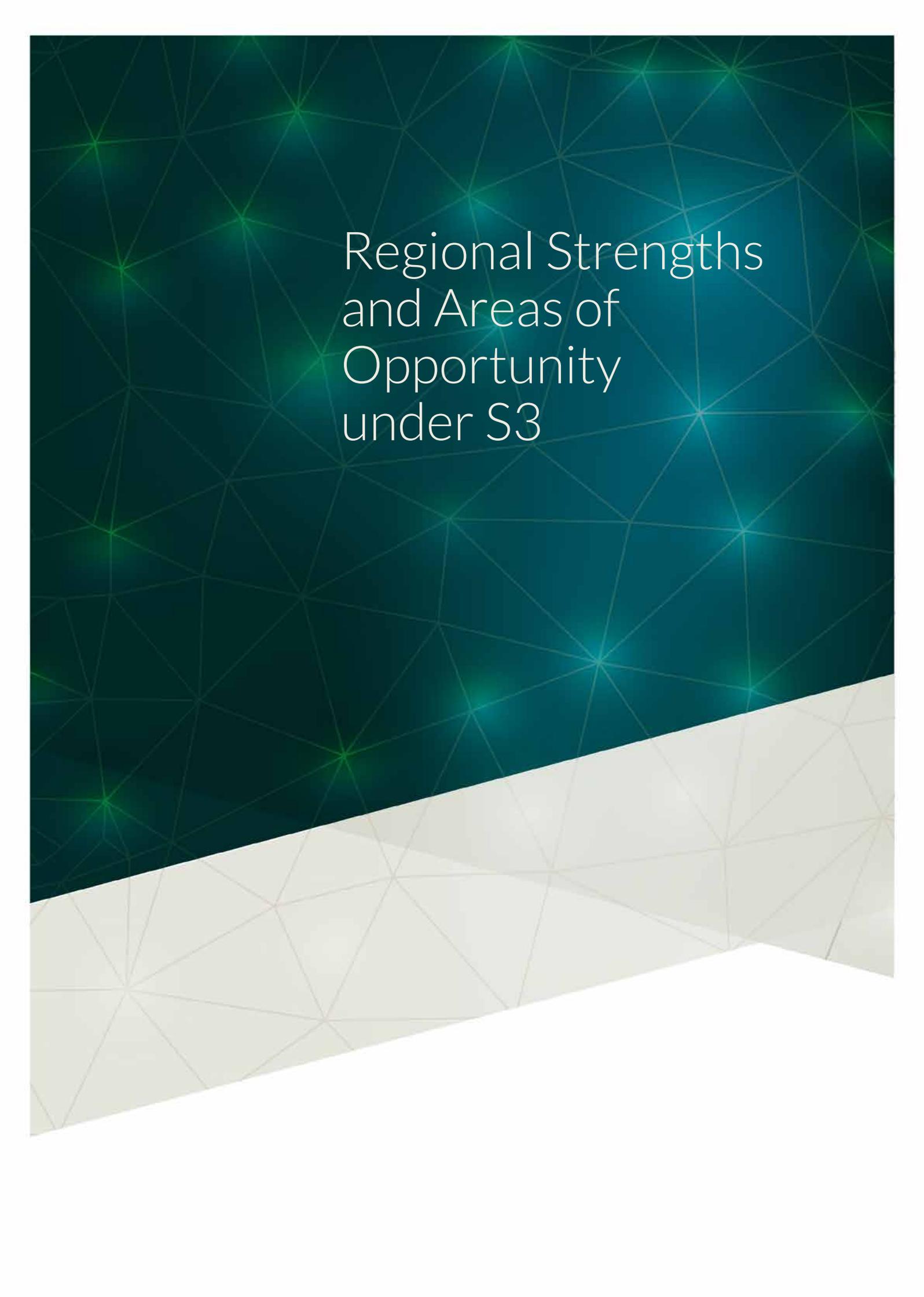
Submissions called for increased infrastructure investment and industry-academia collaboration, along with financial supports for SMEs, such as feasibility grants and enhanced tax supports for R&D, to encourage their innovation, as well as to build connections and capability. Other suggestions included a place-based emphasis, refining funding models and tax credits, along with developing an organisational structure to better utilise collaboration between research and enterprise.

### **Supporting Improved RD&I with S3**

Ireland's current enterprise support framework promotes collaboration, clustering and linkages between HEIs and enterprises. Clustering is also a strategic focus for both Enterprise Ireland (EI) and IDA Ireland as a mechanism to promote balanced regional growth and to strengthen enterprise linkages and spillovers. S3 strongly supports the upcoming National Clustering Policy and Framework and will be an important input into that strategy through the identification of regional sectoral strengths, capabilities and opportunities.

The new network of Technological Universities (TUs) will be a critical component of the higher education infrastructure, particularly in a regional context. The TUs will develop unique market-led research offering which will build on the priorities and regional sectoral specialisations identified in S3. This will be supported by ERDF.

The requirement for investment to enhance the digitalisation capacity of the regions 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. The S3 national implementation group will endeavour to communicate the need for an easily navigable RD&I system at the appropriate fora.



# Regional Strengths and Areas of Opportunity under S3

## Regional Strengths and Areas of Opportunity under S3

Realising the enterprise and innovation potential in all regions, and thereby reducing disparities between regions, is a key aspect of S3.

The European Commission has classified two of Ireland's NUTS 2 regions, Eastern and Midland (EMR) and Southern (SR), as "More Developed", based on their GDP per head of population relative to the EU 27 average. These two regions perform strongly in European terms in certain areas. In 2021, Eurostat noted the highest average labour productivity in the EU was €161,700 per person employed in Dublin which was nearly three times as high as the EU average. Eurostat also noted the largest increase in labour productivity relative to the EU average was observed in the SR, where productivity relative to the EU average increased by 170.4 points while the second largest increase was in the Irish capital region, EMR, up 65.8 points. This picture is also reflected in economic output. In 2019, economic output per inhabitant was at least twice as high as the EU average in the EMR and SR. Regional GDP per inhabitant is typically highest in capital regions. One of the few exceptions is the SR.

However, the European Commission has re-classified the Northern and Western Region (NWR) from a "More Developed Region" to a "Transition Region", due to its economic performance and drop in GDP per capita. The difference between the richest and the poorest NUTS 3 areas in Ireland in terms of GVA per capita doubled between 2000 and 2016. With the location of globally competitive multinational companies (MNCs) around the main urban areas of Dublin and Cork, these areas offer increasingly favourable business and innovation environments while areas in the NWR, predominantly rural and remote, increasingly fall behind. It is critical that the potential for economic growth in the NWR is realised and that there is an overall lift in its economic performance and sustainable job creation in order to restore the region to the status of a "More Developed Region". There are particular challenges to be overcome given the NWR's rural structure, along with its relatively peripheral and border location. Addressing regional disparities will also have the effect of relieving unsustainable pressures in the Greater Dublin Area which risk undermining the overall performance of the national economy.

This regional economic context is mirrored in the regional innovation context. In the 2021 results of the European Commission's Regional Innovation Scoreboard, the NWR is now the only NUTS 2 Region in Ireland to be classified as a "Moderate Innovator+", recording an innovation index score between 70% and 100% of the EU average, whereas the SR and EMR are classified as being "Strong Innovators".

The Regional Assemblies and the Regional Enterprise Plans (REPs) Steering Committees are key stakeholders in the regional S3 process. The REPs are important vehicles in translating national level policies and strategies, including S3, into regional and local impact. Smart Specialisation was one of the four thematic areas considered during development of the REPs to 2024, alongside resilience and recovery, transition to a low-carbon economy and new ways of working.

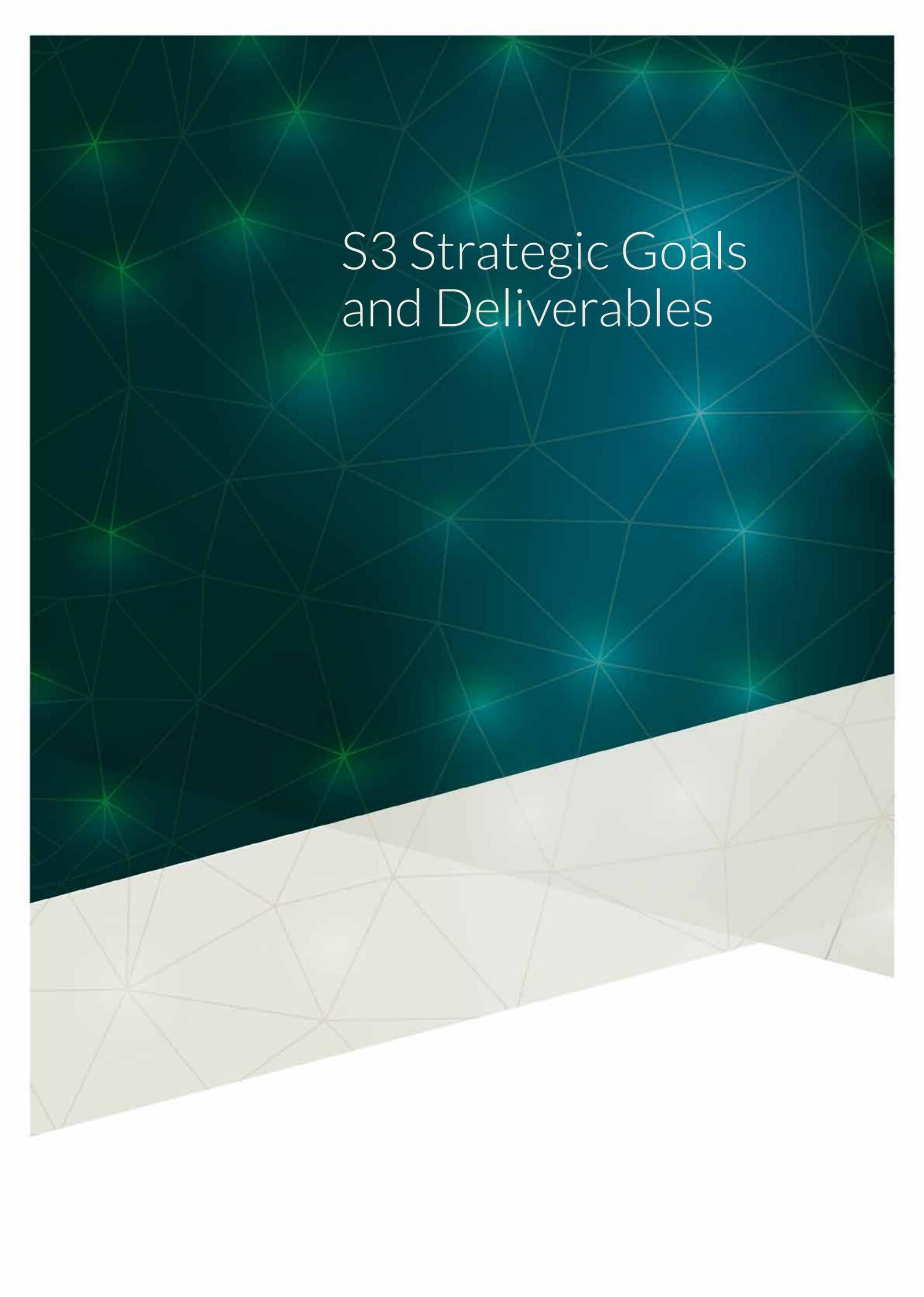
Smart Specialisation is one of the key economic principles adopted in each of the statutory Regional Spatial and Economic Strategies (RSEs) developed by the Regional Assemblies. S3 will complement the work of the RSEs in creating an effective place-based and market-led business ecosystem, allowing all regions to fully utilise their competitive advantages with respect to enterprise innovation and to fully maximise growth in their economies.

Accordingly, the priorities identified by the REPs and RSEs are central to this strategy. They, along with the findings from the S3 consultation process, have allowed us to identify existing and emerging sectoral areas of strength. At a high level, these are:

Northern and Western Region	Eastern and Midland Region	Southern Region
<b>Sectoral Strengths and emerging areas of opportunity</b>		
Advanced Manufacturing and Engineering	Advanced Manufacturing	Advanced Manufacturing
AgriFood and AgriTech	Audiovisual	Automotive/Aerospace
Audiovisual/Creative	Biopharma/Life Sciences	Design
ICT and ICT Services	Engineering	Financial Services
Life Sciences, MedTech and Medical Devices	Financial Services/FinTech	Food/AgriTech
Marine and Blue Economy	Food/AgriTech	ICT
Renewable energy, Climate Change mitigation and sustainability	ICT	Marine/Maritime
		Pharma/MedTech
		Renewable Energy

S3 also identified subsectors and niches within these which are considered to be of specific importance to their regions and areas. These vary by region, dependent on the specific resources and infrastructure available to regions and are dealt with in more depth in the individual regional chapters in the main S3 document.

These sectors are a critical component of S3 and highlight where stakeholders felt that investment should be focused over the next cycle of ERDF.



# S3 Strategic Goals and Deliverables

## S3 Goals and Deliverables

Considering Ireland's strengths, challenges and opportunities to 2027, several strategic goals for S3 have been identified. These goals will support Ireland's ongoing efforts to rise to the challenges of the future identified by our stakeholders by supporting the Smart Specialisation process in all aspects. They are accompanied by high-level deliverables which will ensure these goals are met. These goals and deliverables will be further supported by a more granular list of actions set out in a future annexe. S3 goals and deliverables are:

### High Level Strategic Goals

#### 1

**Our new Smart Specialisation Strategy for Ireland will link national and regional enterprise and innovation policy, connecting the statutory RSEs, Regional Enterprise Plans, Impact 2030: Ireland's Research and Innovation Strategy and other national policies and will bring greater policy coherence at multiple levels of governance.**

This will be achieved through:

- Convening a national Smart Specialisation Implementation Group to bring together regional and national innovation policymakers;
- Continuing to focus on identifying linkages and exploiting synergies between relevant national and regional strategies; and
- Providing input, informed by smart specialisation insights, into the development of new strategies and policies over the lifecycle of S3.

#### 2

**Smart Specialisation will support the adoption of the European Regional Development Fund in Ireland by supporting policy objective 1 'A Smarter Europe'**

This will be achieved through:

- Approval of Ireland's Smart Specialisation Strategy by the European Commission.

#### 3

**Smart Specialisation will improve research and innovation capacity in Ireland's regions.**

This will be achieved through:

- Increasing the intensity of Business R&D that takes place across all regions, with a particular focus on underperforming regions, through delivering new and enhanced agency interventions with a particular focus on strengthening industry-academic collaborations across Ireland.

#### 4

**Smart Specialisation will encourage more regionally dispersed RD&I, strengthen the enterprise base and identify emerging areas of opportunity.**

This will be achieved through:

- Leveraging and building on the analysis of regional strengths and emerging areas of opportunity undertaken as part of the development of Ireland's S3;
- Addressing gaps in existing regional innovation infrastructures and systems through new funding, by supporting projects aligned with the nine Regional Enterprise Plans to 2024 (REPs); and
- Seeking out opportunities to enable inter-regional collaboration through the REP Implementation structures.

## 5

**Smart Specialisation will increase the regional uptake of new advanced technologies to increase the reach of the twin green and digital transformation throughout Irish enterprise.**

This will be achieved through:

- Enhanced supports prioritising knowledge transfer and industry-academic collaboration, informed by our smart specialisation analysis and findings including interventions with a particular focus on strengthening industry-academic collaborations across Ireland.

## 6

**Smart Specialisation will drive the development of skills needed for enhancing innovation activity across the economy**

This will be achieved through:

- New and enhanced supports based on creating the necessary skills for 'needs led' innovation, informed by our smart specialisation analysis and findings

## 7

**Smart Specialisation will encourage the maximising of sectoral strengths through clustering and the scaling of Ireland's existing areas of research excellence.**

This will be achieved through:

- Supporting the development of a new National Clustering policy framework through the identification of regional and national sectoral strengths, capabilities and opportunities; and
- Supporting the scaling of Ireland's existing network of national R&D facilities and clusters by establishing a coherent national framework for S3, and by setting out opportunities that exist within Ireland's regions.

## 8

**Smart Specialisation will lead to a greater visibility and coherence of the innovation system in Ireland's regions both nationally and in Europe.**

This will be achieved through:

- The establishment of an S3 monitoring implementation procedure and governance at local, regional and national level;
- The incorporation of S3 goals, approach and priorities into Impact 2030: Ireland's Research and Innovation Strategy;
- Ongoing engagement with S3 in Ireland by the European Commission.

Smart Specialisation deliverables are to be extensively supported by Ireland's ERDF programmes, subject to European Commission approval, that aim to enhance RD&I activity through new collaboration supports, improved HEI R&D capacity and novel innovation grant initiatives. It is also intended to bolster regional entrepreneurship through investment in the Technological Universities, leveraging the role of further and higher education institutions as anchors for enterprise and for regional growth. The ERDF draft programmes have been extensively informed by this strategy and include specific programme level metrics to ensure targeted impact. Supporting the work of these programmes will provide new and additional value for Ireland and push forward future regional and national advantages across a variety of areas.

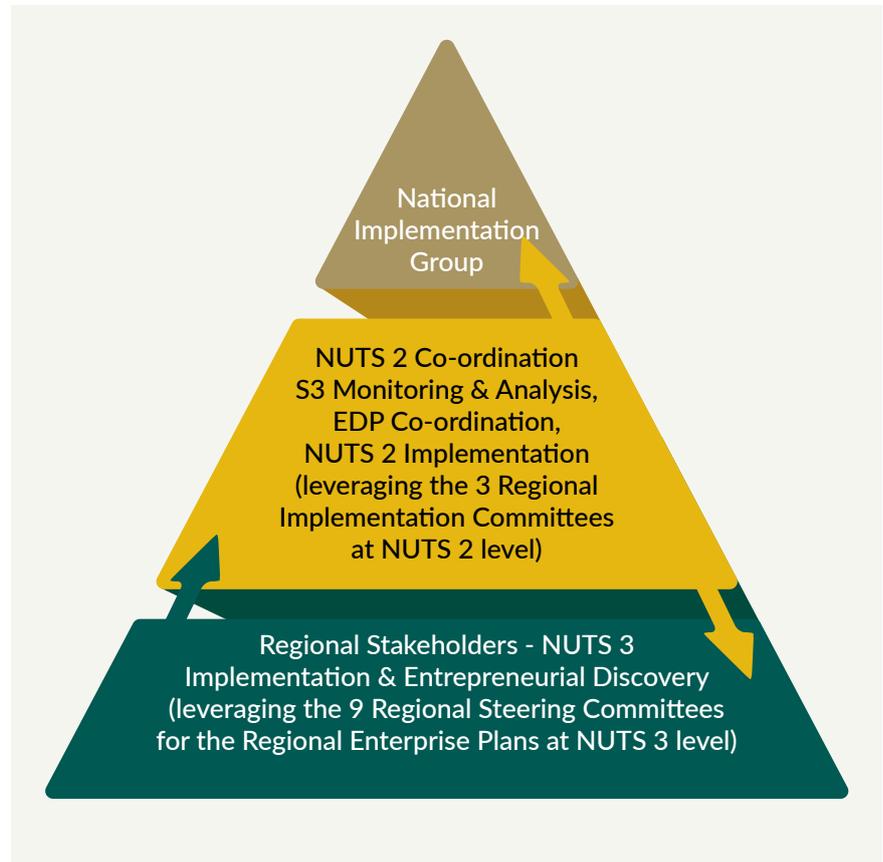
More broadly, S3 will assist in guiding the focus of a range of other funding mechanisms across Government, including Horizon Europe, aimed at driving increased collaborations across research and innovation, industry and the higher education sector, and in ensuring their alignment with ERDF.



# Monitoring and Implementation of S3

## Monitoring and Implementation of S3

Ireland's S3 will be monitored and implemented by a multi-level process involving national and regional stakeholders.



It is recognised that the REPs will be important vehicles in translating S3 into regional and local impact. These stakeholder groupings will also ensure regular EDP feedback. Identified S3 priority areas will be an agenda item for discussion led by the Regional Assembly member at the REPs Steering Committees. The Regional Assemblies will sit on each REP Steering Committee, ensuring S3 priorities (both agreed and emerging) remain a live consideration at a local level.

The REPs are an excellent forum for this engagement as regional and local agents are better equipped to understand regional strengths, identify trends and monitor regional developments. S3 will be an item in the mid-term and final REPs progress reports. In addition to these reports, an update will be provided by DETE's Regional Enterprise Plans and Initiatives Unit to the S3 national implementation group.

The NUTS 2 co-ordination will be managed by three regional implementation groups, which will have three roles:

1. Utilise monitoring indicators and tools such as, but not limited to, the Regional Assemblies' "Regional Development Monitor" which is being developed by the All-Island Research Observatory (AIRO) at Maynooth University, to inform their work on regional innovation trends and developments, monitor progress on S3 implementation, and present findings to the S3 national implementation group. This corresponds to the European Commission's recommendation to make use of analytical and informative tools.

2. Through participation on the nine REPs Steering Committees, the Regional Assembly member will (a) ensure alignment with national and regional priorities and support the identification of new regional priority areas based on their analysis, regional insights and focused stakeholder engagement, and (b) gather cross-regional insights and information on S3 related developments and regional level implementation, co-ordinated and reported to the national implementation group. These insights will be considered and discussed by the S3 national implementation group.
3. Regional implementation groups can perform further analysis on selected regional priority areas, co-ordinated and led at NUTS 2 level, as necessary to inform the S3 national implementation group's deliberations and regional level implementation. The groups will also provide implementation support at NUTS 2 level for delivery of S3 national and regional strategic priorities as agreed with, and consistent with, the work of the national implementation group.

These groups will meet prior to the S3 national implementation group's six-monthly meeting to facilitate its reports to the latter. The three regional implementation groups will also report ongoing S3 alignment with ERDF spending and broader results through indicator monitoring and other research as relevant. This will take the form of a written submission to the S3 national implementation group. Additionally, a full mid-term review will take place during the lifecycle of ERDF which will allow for the monitoring of NUTS 2 regional indicators relevant to S3 implementation.

As per European Commission regulations, a national implementation group responsible for the management of S3 will be established. This national implementation group will ensure all enabling S3 criteria are met at national level. It will ensure S3 governance and monitoring structures, along with regional interests within S3, are identified. This will bring additional value to the S3 process by bridging gaps between national policy and regional implementation. The group will also be responsible for ensuring coherence and promotion of S3 principles across the whole of government.

It will oversee the delivery of S3 national and regional strategic priorities by bringing together relevant policy leads, as well as related agencies and bodies directly involved in implementation as required. It will focus on prioritisation and action planning to identify emerging regional consensus on cross-sectoral economic and innovation developments, ensuring continued alignment between national enterprise and innovation policies and S3.

The S3 national implementation group will meet every six months, based on regular updates from the REPs and Regional Assemblies. Along with their own monitoring results, the S3 national implementation group will prepare a biannual report outlining how S3 is progressing in the national and regional contexts.





**Rialtas na hÉireann**  
Government of Ireland