



Rialtas na hÉireann
Government of Ireland

FUTURE JOBS IRELAND 2019

Preparing Now for Tomorrow's Economy



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Taoiseach's Foreword

Ireland is nearing full employment. We have never had so many people at work, in education, taking on apprenticeships. As a result, living standards are rising and poverty and deprivation rates are falling. People have worked hard over the last eight years and should be proud of how far they have taken their country. But it cannot be taken for granted. There is no room for complacency.

We know that even the most benign Brexit deal will be inferior to the current relationship. We also know that:

- The outlook for the international trading environment is challenging;
- The pace of technological change and its adaptation by society is ever-quickenning;
- The imperatives of climate action mean we must accelerate the decarbonisation of our economy;
- The demographics of our society, and an aging population, put pressures on welfare, pensions and services, and on a generation coming forward whose jobs do not yet exist;
- The productivity of our domestically owned small and medium enterprises lags far behind the foreign owned firms.

However, it is not enough to recognise those challenges. We must act. Future Jobs Ireland seeks to put our economy in a better place to withstand shocks when they come. It sets out a deliberate policy shift to increase firstly quality jobs that will allow for better living standards and secondly, sustainable jobs which will be less vulnerable to loss. Future Jobs Ireland shatters any complacency and sets out an agenda to respond to future risks. Importantly, it seeks to ensure we benefit from the changes that are already happening in the world of technology, artificial intelligence and robotics, and the move to a low-carbon economy.

Sometimes complacency can set in when an economy is performing well. Hard won success can be taken for granted and risks and opportunities overlooked. Eight years ago, economic matters dominated our public affairs, today they rarely feature in public discourse. Precisely because there are multiple opportunities now, we need to decide on how we prioritise our resources, our talent and our investment. Future Jobs Ireland plans for future developments and it also encourages public debate about our economic direction and what we need to do to maintain sustainable growth and quality jobs for this generation and the next.

If we are to have the economy and society we want in 2025 – low carbon, higher productivity, technologically responsive, family continuing to be core, we need to create the environment where that is possible. As a country we need to see lifelong learning as the norm so we are adaptable to new technology and sectors; businesses needs to consider new ways of attracting and retaining talent through remote and flexible working options; and that women as well as men can get the job done.

Future Jobs Ireland places a strong focus on increasing productivity and boosting participation rates so we can take advantage of technological changes and embed them in all parts of our economy. It also ensures that we will continue to enhance the skills of Irish workers as we move quickly to the low-carbon economy.

This strategy provides an ambitious framework for the future of Irish jobs.

We have an opportunity to boost the productivity of our domestically owned SMEs and we must take it. Today, Ireland enjoys a reputation as one of the most attractive places for Foreign Direct Investment. By 2025 I want us to have a similar reputation as the home of dynamic, high achieving, Irish owned SMEs with a talented and adapted workforce. This is the next phase of our national development.

Future Jobs Ireland offers a new direction in how we plan for the economy of the 21st century. It is bold, it is ambitious, and it is achievable. By confronting head-on the challenges we face in the world of work, we can ensure we are able to prosper from the transformations that are coming. We can face the future with confidence because of the preparations we have made today.



Leo Varadkar
Taoiseach
March 2019



Minister's Foreword

What jobs will today's school children have when they enter the workforce? In what types of businesses and sectors will they work? And what education and training will they need to get there? These are some of the questions that *Future Jobs Ireland 2019 – Preparing Now for Tomorrow's Economy* is setting out to answer.

Ireland is at a turning point. The past seven years have seen our economy perform more strongly than we could have hoped for when the Action Plan for Jobs was first introduced in 2012. However, we cannot take for granted that our strong performance will continue; indeed, our success is now contributing to the pressures being experienced in parts of our economy. We have significant vulnerabilities. There is increasing divergence in productivity performance between a small number of high-performing firms and the wider economy. Global uncertainties such as international trade and tax developments, the implications of Brexit and other geopolitical risks pose further challenges.

In addition, technological advances such as automation and artificial intelligence, and our transition to a low carbon economy are already beginning to reshape sectors, business models and jobs. We will see profound changes in some areas and the emergence of new sectors and sub-sectors. Job roles will also change and new types of jobs will appear that will need new and diverse skillsets.

Future Jobs Ireland is how this Government will help to prepare Ireland for the challenges we face and for the economy of tomorrow. Future Jobs Ireland 2019, the first in a series of annual reports as part of this multi-annual framework, outlines our longer-term ambitions for the future of the economy, taking account of the challenges we are facing. Each year we will set out the steps to deliver on these ambitions with the ultimate goal of increasing the resilience of our economy and future-proofing it. Building our resilience means making sure that Ireland is internationally competitive. We need to be more productive and Future Jobs Ireland's five pillars see innovation as a key driver to improving productivity levels across sectors and firms and transitioning successfully to a low carbon and digital economy. Improving productivity will also require a well-skilled workforce and an inclusive and responsive labour market.

Future Jobs Ireland complements *Project Ireland 2040* and *Global Ireland 2025* and builds on other strategies and plans being implemented by my Department such as *Innovation 2020*, *Enterprise 2025 Renewed* and the new *Regional Enterprise Plans*. It will have a key bearing on the future work of the Agencies under my remit including IDA Ireland, Enterprise Ireland, Science Foundation Ireland and the Local Enterprise Offices in supporting our enterprises and developing a culture of innovation and sustainability across our economy.

While the Government will work towards delivering on the ambitions in Future Jobs Ireland 2019, we need our enterprises and workers to also be ambitious for themselves, to prepare for the challenges ahead and to seek out new opportunities. Future Jobs Ireland 2019 reflects considerable input from stakeholders and I am determined that this will continue.

Whatever the future holds, if we prepare together now, we can ensure that Ireland is resilient in the face of economic challenges and that our people can continue to prosper in tomorrow's economy.

A handwritten signature in black ink, appearing to read "Heather Humphreys TD".

Heather Humphreys TD
Minister for Business Enterprise and Innovation
March 2019

Executive Summary

Overview

Our economy is in a strong position having recovered impressively from the financial crisis and the subsequent recession. At its nadir in early 2012, the unemployment rate was 16% and almost 50,000 Irish people emigrated that year. Eight years on, Ireland can be proud of the progress made. The seasonally adjusted unemployment rate is down to 5.7% at the end of 2018, almost 2.28 million people are at work and forced emigration has ended.

However, there is no room for complacency. Significant vulnerabilities are evident in the domestic economy such as declining productivity levels in small-to medium-sized enterprises (SMEs). Infrastructural constraints, skills deficits and labour availability, as well as concentrations in some sectors and markets could, unless ameliorated, impede further progress. Internationally, Brexit, growing trade protectionism and the undermining of the rules-based international trading system could threaten our future economic welfare.

The Government is ambitious to build upon the gains we have made in recent years and to ensure our people enjoy higher standards of living and quality of life now, and into the future. Several interconnected Government initiatives are underway to reinforce this. *Project Ireland 2040* provides the framework for making Ireland a great place to live - and do business - through integrated spatial and investment strategies. *Global Ireland* will boost our international relations so that we can better influence our place in the world and targets an ambitious doubling of our overseas impact. Complementing these initiatives, *Future Jobs Ireland* will ensure our enterprises and workers are well placed to prosper in the rapidly changing global economy.

While the future is uncertain, it is clear that by 2025, our workers and enterprises will be operating in a changed economy. Technology continues to herald new ways of doing business and new economic opportunities. This presents challenges but also new possibilities - certain job roles will disappear or be redefined, and emerging job roles will require new and different skillsets. We must exploit and enhance Ireland's capability in cutting edge technological areas such as Artificial Intelligence, Augmented and Virtual Reality, Data Analytics, the Internet of Things and blockchain to facilitate and help companies co-innovate and develop solutions in application areas such as MarineTech, Connected and Autonomous Vehicles, Advanced Manufacturing, AgriFoodTech, and Smart Cities. Our natural environment is changing and it is imperative that we play our role in tackling climate change. The move to a low-carbon economy will radically change sectors of the economy and present new opportunities to those firms on the cutting edge of this transition.

It is time to shift our enterprise and jobs focus to ensure quality jobs that will be resilient into the future. This is not just a question of more jobs, instead it is focused on enabling the creation of highly productive, sustainable jobs. **It is also time to shift the way**

we work if we are to sustain and increase labour market participation. *Future Jobs Ireland* will focus on five pillars in the areas of:

- embracing innovation and technological change;
- improving SME productivity;
- enhancing skills and developing and attracting talent;
- increasing participation in the labour force; and
- transitioning to a low carbon economy.

Future Jobs Ireland 2019 sets out core ambitions for each of these pillars, each backed up by a set of specific deliverables representing crucial steps toward achieving each ambition. These deliverables are built on engagement, including through the national Future Jobs Summit held in November 2018 which brought Government and stakeholders together to discuss the pillars within *Future Jobs Ireland*. The deliverables outlined here for 2019 represent the first stage of *Future Jobs Ireland* which will be built on in subsequent annual editions.

Delivering on our Ambitions

PILLAR 1 EMBRACING INNOVATION AND TECHNOLOGICAL CHANGE

We are now experiencing a fourth industrial revolution where the impact of digitalisation is advancing in new and unanticipated ways. This will entail fundamental changes in many occupations that exist today, and the creation of entirely new roles in the workplace.

Ireland's economic success in the past relied on our ability to transform and adapt.

Digitalisation requires investment by enterprises to innovate and by our people to learn new skills.

We must prepare now so that our enterprises and people are ready to exploit opportunities. This means encouraging greater investment by enterprises in research, development and innovation. It also requires new strategies to guide the digital transition as well as forming dedicated teams to exploit opportunities that will arise.

The Government's 2018 Research Prioritisation under Innovation 2020 will be instrumental in supporting Future Jobs. The ICT priority areas have been broadened and now include Robotics, Artificial Intelligence (AI) including Machine Learning, Augmented Reality and Virtual Reality (AR&VR). The Sustainable Food Production and Processing priority area now includes climate smart and environmentally sustainable food systems while other priority areas have been updated to reflect decarbonising the energy system and sustainable living. In manufacturing, the priorities reflect advanced and smart manufacturing, processing technologies and novel materials.

New immersive technologies such as virtual, augmented and mixed reality are transforming how we view and experience the world and fundamentally changing and enhancing products and services with digital content. These disruptive technologies impact on many industries and markets, enhancing real-world views, captivating audiences and shifting perspectives, with applications from storytelling, gaming and entertainment to arts, culture and tourism, from architecture and engineering, to medicine, retail, journalism and education.

Increasing computing power and Big Data are accelerating the development of Artificial Intelligence. Tasks which traditionally required human judgement and thinking are being replicated and automated. Already AI is impacting transport, social media, security, finance and gaming and is anticipated to affect many more areas in future. The EU is developing coordinated actions across EU member states to ensure that Europe becomes a global leader in AI. Ireland is well positioned to be a leader in this area and will develop a National AI Strategy which will ensure our research centres, businesses and the public sector exploit AI technologies to secure greater levels of productivity and wellbeing.

Future Jobs Ireland will deliver on the following ambitions through a range of deliverables over the coming years:

Ambitions

Position Ireland as a leading pioneer in technology adoption by investing in demonstrator sites and developing enabling frameworks and standards

Implement a strategic approach to maximise the benefits from digitalisation

Position the Public Service to be a leader in technology adoption and innovation

Establish Top Teams to realise opportunities presented by technological changes and the move to a low carbon economy

Increase the capacity of SMEs to engage in research, development & innovation

Incentivise SMEs to invest in new technologies

Develop Transition Teams to assist workers and sectors likely to be most challenged by our changing economy

The full range of 2019 Deliverables is listed in full in Appendix A. In 2019, deliverables to realise these ambitions aim to:

Form **Top Teams** in Artificial Intelligence, GovTech and offshore renewables, in consultation with stakeholders, to progress these areas of opportunity for Ireland

Embrace **digital transformation of public services** to make them more efficient and responsive to businesses' and citizens' needs

Further develop **eHealth** opportunities

Issue a further call under the **Disruptive Technologies** Innovation Fund and develop further incentives to innovate

Develop Ireland as a centre for developing and **testing new technologies** such as Collaborative Robotics (Cobotics), Augmented/Virtual Reality (AR/VR), micro & nano-electronics, photonics, Internet of Things, energy systems, and advanced materials by, for example:

Deliverables

- extending the EI/IDA Irish Manufacturing Research Additive Manufacturing technology centre to include Cobotics and AR/VR
- progressing the Advanced Manufacturing Centre
- expanding the Tyndall National Institute
- commencing the development of a National Centre of Excellence on High Performance and Nearly Zero Energy Buildings
- commencing the development of a National Design Centre

Deliver **policy initiatives** including:

- an Industry 4.0 Strategy,
- a National Digital Strategy, and
- a National Artificial Intelligence Strategy

Develop our knowledge of the impact of economic transition on vulnerable workers and sectors with a view to developing a strategy for **Transition Teams** to support such workers

As set out in the Appendix, each Deliverable has been assigned a leading Department and an implementation timeframe.

Targets

Future Jobs Ireland will target a significant increase in Gross Expenditure on Research & Development intensity from 1.4% to 2.5% of GNP by 2025 (target to be reviewed in the context of the development of successor to *Innovation 2020*).

We will also aim for substantial increases in the share of SMEs introducing product or process innovations and with marketing or organisational innovations.

PILLAR 2 IMPROVING SME PRODUCTIVITY

A driving goal of Government policy is to increase the living standards and quality of life of our people. Increasing productivity levels is necessary to achieve this goal. For individual firms, market success and growth, particularly in international markets, depends on higher productivity translating into improved competitiveness. However, we have seen a decline in productivity in SMEs in recent years.

While Innovation is a critical driver of improving productivity, more must be done. *Future Jobs Ireland* will deliver on the following ambitions through a range of deliverables over the coming years.

Ambitions

Diversify our enterprise base to ensure the Irish economy is more resilient and adaptable

Promote enterprise productivity as a driver of economic prosperity

Enhance business framework conditions for firm creation and growth

Encourage enterprises to exploit technology and business process improvements to increase productivity

Improve leadership and management skills in SMEs

Strengthen linkages between SMEs and multinational enterprises and our tertiary education institutions

In 2019, deliverables to realise these ambitions aim to:

- Deliverables**
- Increase the impact of **Local Enterprise Offices (LEOs)**
 - Increase SME take-up of Enterprise Ireland (EI) and LEO **productivity supports**
 - Develop a **new investment funding** facility to assist indigenous Irish companies in scaling their businesses
 - Encourage the growth of **clusters** where enterprises can grow and help each other and deepen **linkages** between foreign and Irish owned businesses
 - Drive productivity growth in the **construction** and **retail** sectors
 - Strengthen the impact of the **National Competitiveness Council** through its role as the National Productivity Board
 - Deliver a new **female entrepreneurship** strategy

Targets

Future Jobs Ireland will target an annual average increase in multifactor productivity (which captures how efficiently we use our labour and other resources) in the domestic sectors of the economy by 1% per year to 2025.

PILLAR 3 ENHANCING SKILLS AND DEVELOPING AND ATTRACTING TALENT

Our people are our greatest resource and our unique competitive advantage. For our businesses and economy to succeed in a transformed and competitive global economy, our managers and workers must have up-to-date skills and continue to train and develop *throughout* their careers.

We must ensure that all our people have accessible upskilling options and that our education and training providers offer relevant and up-to-date courses which meet the needs of enterprises and workers. In addition, Ireland is competing with other countries to attract talented people and this competition will grow.

Future Jobs Ireland will deliver on the following ambitions through a range of deliverables over the coming years:

- Ambitions**
- Provide high quality and timely education and training responses to evolving enterprise and skills needs
 - Encourage lifelong learning and upskilling
 - Foster participation in apprenticeship and traineeship programmes
 - Compete successfully for international talent
 - Improve career guidance and advice provision

In 2019, deliverables to realise these ambitions aim to:

- Engrain **lifelong learning** and offer career enhancing opportunities to workers
- Promote **flexible training** options
- Match training to the skills needs** of workers and enterprises
- Ensure our **economic migration** system is responsive to our labour market needs
- Provide **training in emerging technologies**
- Develop a programme for **SMEs taking part in training and upskilling** for the first time
- Introduce a new online marketplace for **apprenticeship** opportunities
- Offer **career advice to workers** through the Public Employment Service

Deliverables

Targets

Future Jobs Ireland will target a doubling of participation in lifelong learning by 2025. We will also aim to reach, and if possible exceed, the EU average in terms of the percentage of the population with at least basic digital skills and target a substantial increase in investment in training in Irish enterprises.

PILLAR 4 INCREASING PARTICIPATION IN THE LABOUR FORCE

Despite recent performance the Irish labour market has persistent structural weaknesses in certain areas. The cost and availability of high-quality Early Learning and Care continues to be a barrier to parents, and particularly women, joining the labour force. Also, as people are living and working for longer, we must have a labour market welcoming of older workers.

Future Jobs Ireland is engaging with these structural challenges by easing barriers to entry into the workforce including investment in Early Learning and Care, providing tailored activation and training supports and generating attractive employment opportunities.

Future Jobs Ireland will deliver on the following ambitions through a range of deliverables over the coming years:

- Encourage participation in the labour force through high-quality Early Learning and Care
 - Foster participation in the labour force through flexible working solutions
 - Improve incentives to participate in the labour force
- Ambitions**
- Encourage adult dependents and beneficiaries of other full-time welfare payments to engage in activation, enter and/or stay in the workforce
 - Undertake promotional campaigns to encourage greater levels of participation in the labour force

In 2019, deliverables to realise these ambitions aim to:

- Develop guidelines for employers on **flexible working options**
 - Conduct a **national consultation** on extending flexible working options
 - Promote work experience for **young people**
- Deliverables**
- Improve employment outcomes for **people with disabilities**
 - Develop a **return to work service** for particular groups as part of the Public Employment Service
 - Provide incentives for **people who wish to work longer**

- Targets**
- Future Jobs Ireland* will target a substantial 3 percentage point increase in overall participation rates for people aged 25 to 69 years to 78% by 2025 with higher increases for females and older people.

PILLAR 5 TRANSITIONING TO A LOW CARBON ECONOMY

To meet Ireland's climate goals, a step change in decarbonising the economy is required over the next decade. This will see entire sectors of the economy undergo radical changes and create new types of enterprises and jobs.

Government and enterprise have important roles to play to encourage, develop and adopt innovative technologies, products and services that increase efficiencies, reduce waste and deliver sustainable development as economies across the world transition to low carbon, bio and circular economies. To achieve this goal, *Future Jobs Ireland* will complement the *All of Government Climate Plan*.

The development of low carbon, bio and circular economies also present commercial opportunities to companies across many sectors in Ireland, in addition to the desired environmental benefits.

Future Jobs Ireland will deliver on the following ambitions through a range of deliverables over the coming years:

Become a leader in adopting and developing standards in the low carbon economy

Ambitions Realise the opportunities for economic activity and job creation

Leverage Ireland's natural resources, enterprise strengths and innovative capacity to be a global leader in the circular and bioeconomy

In 2019, deliverables to realise these ambitions aim to:

Review the **regional dimension** of the economic and employment implications of the transition to a low carbon economy

Position Ireland as a centre in research, development and innovation, for **smart grids, buildings and renewable technologies**

Deliver a **national deep retrofit programme** for existing housing stock.

Deliverables Promote **electric vehicles** and achieve over 10,000 electric vehicles on the road by the end of the year

Identify barriers to the development of the bioeconomy

Identify **opportunities for certification, standards** and labels, e.g. for bio-based products

Develop and implement **green procurement policy**

Targets *Future Jobs Ireland* will target the completion of some 250,000 residential retrofits. We will target an increase in the share of total energy use from renewable resources to 20% by 2025. We will also set ambitious targets, including for CO₂ reductions, in the *All of Government Climate Plan*, which will seek to make Ireland a leader in responding to climate disruption.

Implementation and Next Steps

In recognition that *Future Jobs Ireland* is a medium-term framework, high level targets for 2025 have been set for each pillar. More discrete metrics and targets have also been established for each deliverable.

Progress will be monitored with published progress reports every six months.

Throughout the course of 2019, Government Departments will work collaboratively with stakeholders to develop further deliverables for inclusion in *Future Jobs Ireland 2020*.



Why Future Jobs Ireland?

Why Future Jobs Ireland?

Our Economic Journey

The Irish economy has made an impressive recovery from the downturn that followed the financial crisis and is currently performing strongly. Nowhere is this progress more evident than in the labour market. **At almost 2.28 million¹, there are more people employed in Ireland than ever before.** We should be proud of the progress we have made but this is no time for complacency. We need to respond to the vulnerabilities in the domestic economy, such as low productivity levels especially in indigenous firms. We must also ensure our economy is well positioned to adapt to a low-carbon future and a revolution in digitalisation and automation. The Government is determined to protect the hard-won economic recovery through planning and implementation to maintain a competitive edge, as well as for the future needs of business and workers.

There is also a high degree of global uncertainty as to the implications of Brexit and international trade and tax developments that could stall recent progress. As highlighted in the *National Risk Assessment 2018*, Ireland, as a small open economy, and one in which multinational enterprises play an important role, is highly exposed to changes in global economic and trading conditions and significant movements in exchange rates, particularly in terms of its trade performance.² Ireland's economy and enterprise base needs to be resilient in the face of such geopolitical risks.

There are significant fragilities in Ireland's enterprise base, including over-reliance on a small number of export markets, foreign direct investment (FDI) source markets and sectors, in terms of value-added and exports, as well as low productivity in the indigenous parts of the economy. The recent *OECD Economic Survey of Ireland* highlighted the fact that most Irish firms have experienced declining productivity over the past decade and that the large productivity gap between a small number of high-performing "frontier" firms (typically foreign-owned) and the wider economy (typically Irish-owned) had widened.³

Similarly, the National Competitiveness Council (NCC) in its Productivity Statement 2018 has also cautioned that the sustainability of Irish growth is threatened by the reliance of the economy on a small number of highly productive large companies.⁴

To sustain economic growth and ensure we can adapt to the challenges of tomorrow's economy, we must focus on building resilience. Ireland's economic resilience is dependent on the productivity of our firms.

¹ [CSO, Labour Force Survey Quarter 4 2018 – seasonally adjusted](#)

² [Department of An Taoiseach \(2018\) National Risk Assessment 2018, Department of An Taoiseach, Dublin.](#)

³ Papa et al (2018) "Patterns of firm-level productivity in Ireland", OECD Productivity Working Paper No 15, Paris

⁴ [National Competitiveness Council's Productivity Statement 2018, National Competitiveness Council, Dublin](#)

The Importance of Productivity

Productivity growth is a major determinant of national competitiveness, enabling firms to compete successfully in international markets by facilitating output to be produced more efficiently.⁵ Productivity determines long-term economic growth and sustainable wage rates.

A productive society enjoys broader social benefits through raising living standards and quality of life. The efficient use of resources reduces the cost of production, translating into lower prices for consumers which increases real incomes. This in turn improves people's ability to purchase goods and services, enjoy leisure, improve housing and education and contribute to social and environmental programs.

In the coming years and decades, improving the resilience of the Irish economy means ensuring productivity gains are widely spread across a larger number of sectors and enterprises. This will help us to get the best out of resources, such as our skills, infrastructure and capital to sustain and improve living standards.

In practice, improving productivity requires modern and high quality national economic infrastructure, including transport, broadband and energy, as well as ensuring high quality human capital through investment in education and skills. Moreover, the development of our human and physical capital must be aligned with the decarbonisation agenda, as well as anticipating the needs of the more technology driven economy of the future. Improving productivity also means creating the right mix of supports and incentives for firms to collaborate and learn from each other and to promote more mutually reinforcing interactions (spillovers) between leading enterprises and underperforming ones. Similarly, it means maintaining an open and responsive labour market, so people, knowledge and skills can move freely around the economy. Furthermore, it means enabling everybody to access the services and supports they need to participate in the economy. Finally, it means cultivating a collaborative and dynamic national innovation system facilitated by world class research institutions and public investment in research, development and innovation (RD&I).

What is Productivity?

Productivity is essentially a measure of how efficiently production inputs, like labour and capital, are being used in an economy to produce a given level of output. At the company level, productivity is a measure of the efficiency of a company's production process.

Productivity is the key source of economic growth and competitiveness. A country's ability to improve its standard of living depends almost entirely on its ability to raise its output per worker, i.e., producing more goods and services for a given number of hours of work.

⁵ [National Competitiveness Council's Productivity Statement 2018, National Competitiveness Council, Dublin](#)

Increasing productivity will help our enterprises to compete internationally, be more efficient and develop and exploit new and existing technologies. 99.8% of our enterprises are micro-, small- or medium-sized enterprises⁶ (SMEs).⁷ Approximately 74% of these are outside of Dublin so to improve regional performance, productivity improvements must be realised by SMEs across the country.

Preparing Now for Tomorrow's Economy

The challenges and opportunities for workers and enterprises are being explored by a number of international organisations including the OECD and the International Labour Organisation (ILO), of which Ireland is an active member and sits on the ILO's Governing Body. Many leading countries are developing strategies to transition to digital and low carbon economies. For Ireland, in the coming decades, the structure of our economy will undergo profound transformation as the impact of new technologies and decarbonisation reshape industries and jobs. The nascent revolution in robotics, artificial intelligence and automation will transform our future labour market. This means certain job roles will disappear or be redefined and adapted to new technologies and brand new job roles will appear requiring new and different skillsets.

Many of today's school children will be employed in jobs and industries yet to be conceived. A recent study estimated that the average Irish worker faced a 46% probability of being automated by the 2030s.⁸ While there is ongoing debate about the scale and timing of automation's impact in the workplace, it is generally acknowledged that technology is going to significantly alter many occupations and create new ones which will demand different skills in the near future. This was highlighted in the recent 'Digital Transformation: Assessing the Impact of Digitalisation on Ireland's Workforce'⁹ published by the Expert Group on Future Skills Needs (EGFSN). This level of disruption means we must prepare for the impending upheaval. Indicators suggest that we are not currently well equipped for this level of disruption. For example, according to the Digital Economy and Society Index (DESI), in Ireland 48% of the population have at least basic digital skills as against the EU average of 58%.¹⁰

The transition to a low-carbon future will also change many sectors of the economy. To meet Ireland's climate goals, a step change in decarbonising the economy is required over the next decade. This will also see entire sectors of the economy undergo radical changes and create new types of enterprises and jobs. Ireland has enormous potential for renewable energy as well as becoming a global leader in the bioeconomy. However, this will require

⁶ The EU definition of an SME includes micro, small and medium sized companies (made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding €50 million, and/or an annual balance sheet total not exceeding €43 million). References to SMEs throughout also include micro-enterprises unless stated otherwise.

⁷ CSO, Business Demography 2016

⁸ [Nedelkoska, L. and Quintini, G. \(2018\). "Automation, skills use and training", OECD Social, Employment and Migration Working Papers, No. 202, OECD Publishing, Paris.](#)

⁹ [EGFSN \(2018\), Digital Transformation: Assessing the Impact of Digitalisation on Ireland's Workforce](#)

¹⁰ [European Commission, Digital Economy and Society Index, Country Profile 2018](#)

investment in new skills for the green economy, as well as appropriate assistance and incentives to enable enterprise to make the transition.

Given our particular circumstances and vulnerabilities we need to future-proof our jobs, identifying those sectors that are vulnerable and opportunities for the future, and take steps to make sure that our people are as well-equipped as they can be to take up the jobs of the future.

This means achieving the right balance in how we deliver the skills for the future economy. We need to enhance Ireland's lifelong learning provision to help workers re-skill throughout their working lives. We need to enable enterprises, and SMEs in particular, to invest in up-skilling/ re-skilling their workforce, including their managerial capacity so as to enhance and maintain productivity, adapt to technological disruption, and identify and exploit emergent opportunities from the digital and green economies.

In addition to investing in the right skills, the supply of labour is integral to Ireland's economic capacity. In a growing economy, excess demand for labour can push up labour costs and threaten continued growth. Conventionally, jobs have been filled from the pool of existing workers and new entrants to the labour market e.g. graduates and migrants. We are already competing with other countries for talented workers and there are limits to the numbers of people entering the workforce annually. We must therefore explore all potential sources of labour and improve participation rates.

We must ensure that we are using our people to best effect and help bring more of our population into employment. Despite the impressive recovery in the Irish labour market, Irish rates of economic inactivity and participation in the labour force have lagged. The cost and availability of high-quality Early Learning and Care continues to be a barrier to women being part of the labour force. The welcome development that Irish people are living for longer means that we must have a labour market welcoming of older workers. We must therefore work to ensure that our labour market offers attractive, high quality jobs; that people are enabled and incentivised to seek employment; and that barriers to participation are minimised.

These trends individually and collectively will have an impact on our enterprises and economic growth prospects. We can expect some long-established sectors to undergo radical changes and new types of enterprises to be created. The best way to mitigate all of these risks is to improve the resilience of the economy through higher productivity.

Future Jobs Ireland will deliver the required policy reforms to enhance productivity, create quality and sustainable jobs, and build a resilient, innovative, open and globally connected economy, capable of coping with technological and other transformational changes the economy will face.

Five Pillars

How can we ensure our workers and enterprises will be resilient in an uncertain future?

Future Jobs Ireland has been prepared as an overarching framework for Government to prepare our enterprises and workers for the changes ahead. While the future is uncertain, we must focus on those areas which can build resilience.

The pillars identified for *Future Jobs Ireland 2019* are:

1. Embracing Innovation and Technological Change
2. Improving SME Productivity
3. Enhancing Skills and Developing and Attracting Talent
4. Increasing Participation in the Labour Force
5. Transitioning to a Low Carbon Economy

Future Jobs Ireland is multi-annual. The ambitions and deliverables in *Future Jobs Ireland 2019* marks the beginning of the journey and are stepping stones to achieving our medium-term objectives. Given the uncertainty of the future, additional or more specific pillars may emerge or be replaced over time.

The five-pillar structure helps frame different dimensions of the challenges we face; however, it is important to acknowledge the high level of inter-dependence between them. The challenge of productivity is closely related to the innovative capacity of enterprises, especially regarding the application of existing and new technologies to improve work processes and output efficiencies, to create new and better products and break into new markets. Better productivity will also improve enterprise sustainability and enable them to adapt more easily to the broader transformations occurring in the economy as we move away from fossil fuels towards a low carbon future. Similarly, developing the right skills and talent for the future economy will help firms improve their productivity; foster innovation; improve the ability of people to participate in the labour market and take up new employment opportunities; and enable workers to adapt to changing roles and occupations as industries are reshaped by automation, digitalisation and a low carbon economy.

An Integrated Cross-Government Agenda

Future Jobs Ireland is an integral component of the Government's over-arching plan for the future of the Irish economy. *Future Jobs Ireland*, along with *Project Ireland 2040*, *Global Ireland 2025*¹¹ and the Government's forthcoming *All of Government Climate Plan* represent an integrated four-fold approach to prepare for the opportunities and challenges of the future economy.

PROJECT IRELAND 2040

Project Ireland 2040 will drive Ireland's long term economic, environmental and social progress across all parts of the country over the next decade.¹² The plan comprises a new approach to spatial planning in Ireland through the *National Planning Framework*¹³ (NPF) and an integrated *National Development Plan 2018–2027*¹⁴ (NDP) for major public investment.

The performance of the Irish economy and our ability to realise its full growth potential in a sustainable way are all inextricably linked and critically dependent on the quality of spatial planning. An extra one million people are projected to be living in Ireland by 2040, of which 660,000 people are expected to be employed. It will be vital that we can meet this employment challenge, through effective investment in the infrastructure underpinning enterprise, innovation and skills to create the additional jobs required in the period up until 2040.

Project Ireland 2040 also incorporates a strong regional dimension with particular focus on achieving more balanced growth outside Dublin. One of the Strategic Outcomes of *Project Ireland 2040* is to achieve a strong economy, backed by enterprise, innovation and skills. Achieving this outcome will depend on creating places that can foster enterprise and innovation and attract investment and talent. Therefore *Project Ireland 2040* has set ambitious population growth targets to enable the four cities of Cork, Limerick, Galway and Waterford to each grow and become cities of scale. In addition, other large urban centres, which fulfil the role of regional centres, have also been prioritised. These include Athlone and Sligo, and take into account the linkages between centres like Letterkenny and Derry and Drogheda-Dundalk-Newry. *Future Jobs Ireland* will progress this by building regional economic drivers and by reinforcing opportunities to diversify and strengthen the rural economy and to leverage the potential of regional locations and communities.

SUPPORTING THE REGIONS

Strong regions will provide the basis for improving economic opportunities and job potential in rural areas. *Project Ireland 2040* also places an emphasis on achieving Strengthened Rural Economies and Communities. The achievement of this Strategic Outcome is bolstered by the *Rural Regeneration and Development Fund*¹⁵ (RRDF). The RRDF is a €1 billion

¹¹ [Government of Ireland \(2018\), Global Ireland Ireland's Global Footprint to 2025](#)

¹² [Government of Ireland \(2018\), Project Ireland 2040](#)

¹³ [Government of Ireland \(2018\), National Planning Framework](#)

¹⁴ [Government of Ireland \(2018\), National Development Plan 2018-2027](#)

¹⁵ [Rural Regeneration and Development Fund](#)

investment in rural renewal to enable towns, villages and outlying areas to grow sustainably, delivering on the NPF objectives. Future calls for proposals under the Fund will take into account the objectives of *Future Jobs Ireland*.

The Department of Culture, Heritage and the Gaeltacht and Údarás na Gaeltachta have significant roles to play in the economic, linguistic, social and cultural development of the Gaeltacht and the maintenance of island communities. In that context, the work of Údarás na Gaeltachta with respect to job creation and enterprise support in the Gaeltacht is of particular importance and significance given that the organisation operates in all of the seven designated Gaeltacht regions, which include some of the most geographically peripheral regions in the State.

Regional Spatial and Economic Strategies, aligned with *Project Ireland 2040*, are being developed by the regional assemblies. These will identify opportunities for increased coordination of investments within and across regions to unlock potential through, for example, the role that Institutes of Technology can play in a regional context and the Atlantic Economic Corridor¹⁶. The Atlantic Economic Corridor initiative, led by the Department of Rural and Community Development, seeks to maximise the enterprise assets along the western seaboard from Kerry to Donegal, and to combine the economic hubs, clusters and catchments of the area to attract investment, improve competitiveness and job creation.

Enterprise 2025 Renewed identifies the need to realise the potential of our regions through investments in place-making. From an enterprise development perspective, investment in the creation of 'place' is key to realising regional potential and is a key component of Ireland's current and future value proposition for winning FDI. Sustainable enterprise thrives in supportive business environments that enhance competitiveness and productivity. Companies are attracted to invest in locations where they can access skills, where people will want to live and work and where the surrounding infrastructures are supportive of business. It is a combination of factors that delivers efficiencies, economies of scale and wider societal benefits.

The *Urban Regeneration and Development Fund* (URDF) and RRDF, underpinned by the NDP, provide significant public resources for the delivery of place-making and a central funding mechanism to deliver place-making related projects.

The *Future Jobs Ireland* agenda aligns with the ambitions of regional initiatives such as the *Regional Enterprise Plans to 2020*¹⁷ and the *Action Plan for Rural Development*.¹⁸ The *Regional Enterprise Plans to 2020* foster a collaborative approach in each region, bringing together Local Authorities, the enterprise agencies, higher and further education institutions, Local Enterprise Offices (LEOs), the business community, and others, to work towards a better future for their region. The nine new *Regional Enterprise Plans* see the previous

¹⁶ [Atlantic Economic Corridor](#)

¹⁷ [Department of Business, Enterprise and Innovation \(2019\), Regional Enterprise Plans](#)

¹⁸ [Department of Rural and Community Development \(2017\), Action Plan for Rural Development](#)

*Regional Action Plans for Jobs 2015 - 2017/18*¹⁹ evolve to a more strategic, focused approach, in line with and complementing policy developments at a national level. The *Regional Enterprise Plans* aim to drive sustainable and quality job creation in the regions and facilitate each region to achieve its economic potential through collaborative initiatives. The Plans provide a perspective and ideas contextualised from the 'ground-up' and an enterprise led Regional Committee mechanism to facilitate more effective translation of national policy into better regional and local impact.

The *Action Plan for Rural Development* has identified significant potential in sectors such as agriculture, food, forestry, tourism and renewable energy sectors which are important local employers. The plan also encourages the diversification of rural economies to build resilience, create additional jobs in rural areas, and to maximise the opportunity to link employment to emerging issues such as climate change and managing sustainable land use.

*Food Wise 2025*²⁰, Ireland's agri-food sector strategy, has human capital as one of its main themes. It is due to be reviewed over the course of 2019 and will be aligned with *Future Jobs Ireland*.

In addition to this, the *Tourism Action Plan 2019-2021*²¹ identifies priorities to be progressed between now and 2021 in order to maintain sustainable growth in overseas tourism revenue and employment, including placing a greater emphasis on regional growth and season extension in overseas marketing.

GLOBAL IRELAND 2025

Global Ireland 2025 forms another core component of the Government's over-arching framework for preparing Ireland for the economy of the future. Through *Global Ireland 2025* the Government is investing more than ever before in its international presence; opening new markets for Irish businesses and promoting Ireland's international profile by doubling Ireland's global footprint.

Investing in our international presence in this way will enable Ireland to be more ambitious in advancing our strategic international objectives, promoting our values and exerting our influence, both within and beyond the European Union.

Broadening Ireland's enterprise and export base is critical to ensuring the Irish economy is resilient and adaptable to both large firm- and industry-specific shocks, particularly in view of the global tax and trade environment. *Global Ireland 2025* sets out targets to accelerate progress on diversifying and growing Ireland's exports and inward investment, particularly in response to the challenges posed by Brexit.

This includes doubling growth in FDI project investments from non-US markets; accelerating diversification of export markets by Enterprise Ireland (EI) clients, with the ambition that 70%

¹⁹ [Department of Business, Enterprise and Innovation \(2018\), Regional Action Plan for Jobs](#)

²⁰ [Department of Agriculture, Food and the Marine \(2015\), Foodwise 2025](#)

²¹ [Department of Transport, Tourism and Sport \(2018\), Tourism Action Plan 2019-2021](#)

of exports will go beyond the United Kingdom by 2024; and developing the tourism sector, including by tripling revenues from developing markets, including China, to €600 million a year by 2025. *Future Jobs Ireland* will ensure that our enterprises and labour force are equipped to meet these ambitious targets.

ALL OF GOVERNMENT CLIMATE ACTION PLAN

Future Jobs Ireland furthers progress towards Ireland's implementation of the Sustainable Development Goals (SDGs)²² through the pillar Transitioning to a Low Carbon Economy and in line with the *Sustainable Development Goals National Implementation Plan 2018 - 2020*²³ which provides a whole-of-government approach to the implementation of the seventeen SDGs.

The Government is currently preparing a new *All of Government Plan* to bring about a step change in Ireland's climate ambition over the next decade, and beyond. This new Plan will set out the actions which must be taken to make Ireland a leader in responding to climate change in the context of Ireland's greenhouse gas emissions reduction targets for 2021-2030 under the EU Effort Sharing Regulation²⁴ as well as Ireland's 2050 decarbonisation objectives set out in the *2014 National Policy Position on Climate Action and Low Carbon Development*.²⁵

The new Plan will have a strong focus on implementation, including actions with timelines and steps needed to achieve each action, assigning clear lines of responsibility for delivery. These actions will cover:

- regulatory framework;
- adoption of known technologies;
- addressing market failure;
- driving change in business models;
- the public sector leading by example; and
- engaging with citizens and communities.

Mirroring the objectives of *Future Jobs Ireland 2019*, the new Plan will recognise that investment in the low carbon economy has the potential to create high quality employment to assist in the transition to a low carbon economy, including in local communities and workers in regions most impacted by the on-going low-carbon transformation.

²² [UN Sustainable Development Goals](#)

²³ [Sustainable Development Goals National Implementation Plan 2018 - 2020](#)

²⁴ [EU Effort Sharing Regulation](#)

²⁵ [2014 National Policy Position on Climate Action and Low Carbon Development](#)

Embracing Innovation and Technological Change

6,568/094

7,857/9453

8,87/35789

9,0786/47

19,35/8899

45,57/057889

6,678/8890

4,597/5194

687,373/3881

7,546/4154

3,77/1111

0,0675

0,036526

0,34

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Pillar 1. Embracing Innovation and Technological Change

While we are already experiencing the fourth industrial revolution, its full impact is unlikely to be experienced for several decades. However, we must work now to position Ireland to respond to the expected profound changes ahead. Technological change is already impacting several sectors, such as manufacturing, finance, retail and transport. This presents challenges but also new possibilities - certain job roles will disappear or be redefined, and brand-new job roles will appear requiring new and different skillsets.

Some sectors will be more impacted than others. Automation in manufacturing has been on the rise for many years with the increased use of robotics. Advances in artificial intelligence (AI) and increases in processing power have fundamentally changed internationally traded services sectors such as financial services. The retail sector is being radically reshaped due to several technological trends from the massive expansion of online shopping to the impact of self-service machines in the local supermarket. Technology is also transforming the transport and logistics sectors through the advances made in the areas of autonomous vehicles and drones.

These developments present many opportunities in sectors driven by technology: Big Data and Data Analytics; 3D printing, advanced materials and manufacturing; the Internet of Things; Robotics and Automation; FinTech; Connected Health, Life Sciences; User Experience (UX); Design/high end post production; and Virtual & Augmented Reality to name just a few. We want Ireland to be at the frontier of technological developments by rapidly adopting new technologies to boost productivity and ensure that Ireland continues to be competitive internationally.

To do this, we must enable and encourage innovation across sectors and firms. Increasing investment in research, development and innovation (RD&I) and promoting strong links between enterprise and the research community (such as the 300 companies involved in collaborations with 17 SFI research centres) will assist in ensuring Ireland keeps its relative advantage in the tech world and increase the pace of development of the green economy.

Significant work must be done to increase the absorptive capacity of SMEs, in other words ensuring SMEs are able to make the most of knowledge gained from working with or alongside multinational enterprises (MNEs). Progress towards this can be made by promoting collaborative working, ensuring existing supports for RD&I are useful for smaller business and investment in digital and managerial skills. Public-private collaboration can play a vital role by providing tailored support to SMEs, not only in terms of RD&I, but also in terms of investment in other intangibles assets (e.g. software/digitalisation, organisational capital, and management practices).

*Innovation 2020*²⁶ outlines the Government’s approach to enhancing Ireland’s research and innovation base. It sets out a range of actions focused on increasing enterprise engagement in RD&I, improving the quantity and quality of skilled workers, effective regulation of intellectual property, promoting collaboration with EU and international RD&I activity and streamlining governance. *Future Jobs Ireland* will build on progress made to date by focussing on securing the quantity and quality of skilled workers required in light of increased automation and digitisation, improving the capacity of enterprise to absorb technology and exploit its advantages and opportunities; and encourage greater RD&I activity to keep Irish enterprise at the frontier of innovation.

As a small country, Ireland cannot be a leader in all areas of enterprise research and innovation. Instead, we need to target our investment in areas of opportunity that are strategically important – areas that present particular market opportunities for us and where there is a pre-existing, proven combination of enterprise relevance and research strength in Ireland. This is the underpinning rationale for *Research Prioritisation, Ireland’s Smart Specialisation Strategy*, first adopted by Government in 2012.

Innovation 2020 contained a commitment to review these areas with a view to updating and revising them, as appropriate, taking into consideration developments since 2012. The refreshed priority themes and areas for 2018 to 2023 agreed are:

Theme	Priority Area
<i>ICT</i>	Future Networks, Communications and Internet of Things
	Data Analytics, Management, Security, Privacy, Robotics and Artificial Intelligence (including Machine Learning)
	Digital Platforms, Content and Applications, and Augmented Reality and Virtual Reality
<i>Health & Wellbeing</i>	Connected Health and Independent Living
	Medical Devices
	Diagnostics
	Therapeutics
<i>Food</i>	Food for Health
	Smart and Sustainable Food Production and Processing
<i>Energy, Climate Action and Sustainability</i>	Decarbonising the Energy System
	Sustainable Living
<i>Manufacturing and Materials</i>	Advanced and Smart Manufacturing
	Manufacturing and Novel Materials
<i>Services and Business Processes</i>	Innovation in Services and Business Processes

²⁶ [Department of Business, Enterprise and Innovation - Innovation 2020](#)

Targets

<i>KPI</i>	<i>Latest Scores</i>	<i>Baseline Date</i>	<i>2025 Target</i>	<i>Source</i>
<i>GERD as a % of GNP</i>	1.4%	2016	2.5% ²⁷	R&D Budget
<i>SMEs introducing product or process innovations (as % of all SMEs)</i>	46%	2017	55%	EIS ²⁸
<i>SMEs with marketing or organisational innovations (as % of all SMEs)</i>	53%	2017	60%	EIS

CASE STUDY – CONNECTED MEDICAL DEVICE CYBERSECURITY TRANSPARENCY

This Disruptive Technologies Innovation Fund (DTIF) collaborative project, comprising Nova Leah (a Dundalk-based SME) and Dundalk Institute of Technology, will see the use of AI, data analytics and blockchain techniques to provide a real-time platform for the two-way communication of safety-critical security information (i.e. vulnerabilities, threats) between medical device manufacturers and hospitals.

This project connects the ICT sector, in particular AI, data analytics and blockchain with health & wellbeing – medical devices.

Ambition 1.1: Position Ireland as a leading pioneer in technology adoption by investing in demonstrator sites and developing enabling frameworks and standards

Ireland has become the location of choice for many multinational companies to test cutting-edge technologies, to conduct trials of new products and to test and validate technologies in real-world conditions, before bringing them to a wider market. Further investment in new test

²⁷ This is the EU 2020 Target for Ireland. Gross Expenditure on R&D (GERD) expressed as a percentage of GNP is estimated at 1.46% in 2017. Ireland is unlikely to achieve the EU's Europe 2020 target, recommitted to in Innovation 2020, to increase gross expenditure (public and private) in RDI to 2.5% of GNP within the timeframe set of 2020. While the overall level of public and private investment in RDI has been growing steadily, our strong economic growth rate makes it more difficult to increase the intensity level as a percentage of GNP. A 2025 target will be set in the context of developments at EU level and development of a successor to Innovation 2020.

²⁸ [European Innovation Scoreboard 2018](#)

beds and demonstrator sites, as well as expansion of those already in existence, will help place Ireland as a leading pioneer in technology development and application.

Demonstrator Sites and Test Beds

Test beds and demonstrator sites can be useful not only to large companies but also to SMEs as it provides them with an affordable testing environment they can use as the need arises. There are several existing test beds or demonstrator sites currently in operation in Ireland these include: the VistaMilk Agri-Tech Centre, co-funded by SFI, the Department of Agriculture, Food and the Marine and Industry; the EU-supported SmartAgriHubs project; the Atlantic Marine Energy Test Site (AMETS) being developed by Sustainable Energy Authority of Ireland (SEAI); and the SFI-supported MaREI.

Irish Manufacturing Research²⁹ (IMR) has established an advanced Additive Manufacturing (3D printing) research centre³⁰ in the National Technology Park in Mullingar. This centre helps Irish companies to assess the potential of component fabrication using additive manufacturing, as well as evaluating the introduction of this technology in their manufacturing operations. Extending this research centre to accommodate two additional technologies relevant to the Irish manufacturing industry - Collaborative Robotics (Cobotics) and Augmented/Virtual reality (AR/VR) - will provide an essential resource for Irish industry to help increase manufacturing productivity and innovation, and provide training and reskilling in these new advanced technologies.

The Tyndall National Institute in Cork is Ireland's largest dedicated research and development centre, specialising in ICT hardware and systems. It provides demonstration, pilot line and test facilities in a broad range of ICT related areas. *Project Ireland 2040* identifies the expansion of Tyndall as an investment priority, so that it can maintain its position as a leading centre of scale in translational research playing an important role in the further development of ICT-related innovation in Ireland.

The proposed Advanced Manufacturing Centre (AMC), which IDA Ireland is planning to establish, would complement existing research and technology centres and respond to the needs of Ireland's discrete manufacturing industry base. The AMC will provide a collaborative environment focussed on the acceleration of core platform technologies to "digitise" Ireland's discrete manufacturing base and supply chain partners.

Enabling Frameworks

It is also important to create enabling frameworks to develop areas of opportunity such as the development of the Connected and Autonomous Mobility sector in Ireland. Guidelines and a framework for testing connected autonomous vehicles (CAV) on Irish roads are needed as part of an overall strategic roadmap for the development of this sector and will be delivered under *Future Jobs Ireland*.

Digitisation affects all sectors of the economy and society from medical devices to transport and navigation systems. It is well recognised that common standards are needed to enhance

²⁹ [Irish Manufacturing Research](#)

³⁰ [Additive Manufacturing Research Centre](#)

the impact of digitisation. Standardisation in areas of 5G, Internet of things, cloud computing, cybersecurity, Artificial Intelligence, Industry 4.0 and data technologies including blockchain can accelerate digitisation and have an immediate impact on competitiveness in sectors such as eHealth, intelligent transport systems, connected/automated vehicles, smart homes and cities, and advanced manufacturing. The National Standards Authority of Ireland (NSAI) can act as a bridge between standards and Irish business by placing Irish business at the heart of international standards.

With a high level of presence of ICT software and technology companies, Ireland is well placed to contribute to shaping future global standards. Success in standardisation is dependent on a high level of commitment from a broad stakeholder base and close and timely interaction with academia and the research and development community. NSAI is prioritising wider and deeper roles for Irish standardisation participants to put Ireland at the forefront of developing technologies.

2019 DELIVERABLES

- (i) Develop new and existing demonstrator sites and test beds to trial new technologies and business solutions including:
 - a. Expanding supports for advanced manufacturing including through extending the EI/IDA IMR Technology Centre to accommodate Cobotics and AR/VR and the planned establishment of an Advanced Manufacturing Centre. A new governance arrangement will be put in place to ensure coherence of all key supports for advanced manufacturing.
 - b. Further expanding the Tyndall National Institute to provide greater engagement with industry in areas such as micro/nano-electronics, photonics, Internet of Things, energy systems, and advanced materials.
- (ii) Develop a National Centre of Excellence on High Performance and Nearly Zero Energy Buildings (NZEB).
 - a. Establish a National Steering Group
 - b. Deliver NZEB Fundamentals training to over 500 people
 - c. Government to consider the future development of the Centre.
- (iii) Undertake communications campaign promoting enterprise technology capabilities to international buyers, influencers and decision makers.
- (iv) Develop plans for a National Design Centre to support the potential of the design sector to drive innovation and competitiveness.
- (v) Drive the development of the Connected and Autonomous Mobility sector in Ireland including through delivery of guidelines for testing, a strategic roadmap for Ireland and an administrative review of the current road traffic legislation.
- (vi) Position Ireland as a leader for developing standards including by hosting international meetings of influential decision makers in standardisation on key areas of digitisation such as Industry 4.0, blockchain, data security, etc. and utilising such events to benefit local stakeholder communities.

Ambition 1.2: Implement a strategic approach to maximise the benefits from digitalisation

Industry 4.0 Strategy

The term 'Industry 4.0' refers to the digital connection of machines, workpieces and IT systems within manufacturing firms and across value and supply chains, and, the gathering and analysis of data from across these elements towards machine-based decision making. It is being enabled by advanced digital technologies such as the Internet of things, cyber-physical systems, and cloud and cognitive computing. Industry 4.0 offers the potential for significant impact in the manufacturing industry in Ireland through driving productivity gains, enabling new opportunities for goods and services innovation, underpinning the development of new business models and enhancing supply chain integration.

To help firms harness the opportunities arising through Industry 4.0, and in line with fundamental enterprise policy areas such as employment, productivity, competitiveness and sustainability, we will publish and implement a National Industry 4.0 Strategy.

National Digital Strategy

The pace of change in the digital world is accelerating. The amount of data we create and consume continues to double roughly every year, and it is likely that more digital information is now transmitted in a single second than existed on the entire internet just two decades ago.

The National Digital Strategy will set out Ireland's vision and ambition to help Ireland maximise the economic and societal benefits from digitalisation in this fast-changing digital world. It will set out a roadmap across important policy areas, such as infrastructure and security; trust, society and well-being, and the digital economy. It will promote effective provision and use of digital and online services by Government, citizens and SMEs and help drive Ireland forward in terms of our connectivity ambitions, the centrality of data and innovation in the digital economy and addressing existing digital divides among citizens and businesses. An important focus of the Strategy will be driving broad digitalisation of the Public Sector and setting out a clear ambition for increased online government services and the steps necessary to achieve this.

Digitalisation can drive substantial increases in productivity, innovation, social improvements and connections, and economic growth and jobs. This Strategy will help position Ireland to reap these benefits and to position Ireland internationally, and within the European Union, at the heart of digital developments.

Artificial Intelligence (AI) Strategy

The EU defines Artificial Intelligence as systems that display intelligent behaviour by analysing their environment and taking action — with some degree of autonomy — to achieve specific goals³¹. One example is the digital assistant on mobile phones or smart

³¹ [EU Co-ordinated Plan on Artificial Intelligence \(AI\)](#)

speakers. AI can improve products, processes and business models in all sectors as it is able to process huge amounts of data to offer more efficient solutions. A National Artificial Intelligence Strategy would help us to make the most of the opportunities AI offers and to tackle concerns people may have about introducing AI into their business models and processes.

2019 DELIVERABLES

- (i) Publish and implement an Industry 4.0 strategy which will provide an ecosystem and supports for the digital transformation of the manufacturing sector and its supply chain.
- (ii) Finalise and publish the National Digital Strategy to set out Ireland's vision and ambition to maximise the economic and societal benefits of digitalisation, with the Public Service leading in technology adoption.
- (iii) Deliver a National Artificial Intelligence Strategy to align with related EU initiatives and provide a direction for the research and development of AI by enterprises as well as the innovative use of AI by enterprises to improve productivity.

Ambition 1.3: Position the Public Service to be a leader in technology adoption and innovation

If we want Ireland to be a leader in technology adoption and digitalisation, then Government itself must lead by example. The Public Service must fully embrace digital transformation to modernise its front and back office processes, making our public services more efficient and responsive to citizens' and businesses' needs. We need to continue to invest in the use of existing and emerging technologies to improve the delivery of services across sectors such as education and policing.

GovTech

One way in which we can position the Public Service as a leader in technology adoption is by developing GovTech (Government Technology). A focus on GovTech means promoting greater use of digital technology within Government so that the public and enterprises can conduct their business with the public sector faster and at a reduced cost while the public sector can provide improved and expanded services to all customers in a cost-effective way for the Exchequer. GovTech can also help drive an innovation agenda within Government and for the SME community with which it engages.

We will build on initiatives such as the establishment of the Digital Leaders Group under the Civil Service Management Board, to develop an accelerated and co-ordinated digital programme, with a particular focus on leveraging key digital enablers such as MyGovID and the development of a new Digital Postbox service. Furthermore, the power of data is becoming more evident and is the lifeblood of any organisation, including within Government. We will continue to improve the management of data across the public service,

not only to drive efficiencies and to make Government more joined-up, but to protect citizen data and to drive transparency to the heart of processes.

Digitalisation and Innovation in the Health system

Health is another area with substantial untapped benefits that can be realised through increased digitalisation and innovation.

Digitalisation in the health system has the potential to transform healthcare delivery and provide services that are safe, accessible, high quality and more efficient. Notable progress has been made in this area in the last 5 years, including the establishment of eHealth Ireland and the Office of the Chief Information Officer and the phased introduction of new national digital systems including the Maternal & New-born Clinical Management System (MNCMS), the Integrated Financial Management System, the National Medical Laboratory Information System (MedLIS) and the National Integrated Medical Imaging System (NIMIS).

Further acceleration of the roll-out of eHealth is planned under the Sláintecare Implementation Strategy, with a focus on delivering the tools, ICT systems and capabilities needed for the implementation of eHealth systems and infrastructure including Electronic Health Records, ePharmacy, mhealth and telehealth initiatives. Construction of the new National Children's Hospital is underway and it will be the first acute digital hospital in Ireland.

Based in Cork, Dublin and Galway, Health Innovation Hub Ireland (HIHI) is a joint initiative of the Department of Business, Enterprise and Innovation and the Department of Health and supported by EI, Health Service Executive (HSE) and academic partners including University College Cork (UCC), Cork Institute of Technology (CIT), National University of Ireland Galway (NUIG) and Trinity College Dublin (TCD). HIHI's overall aim is to drive collaboration between the health service and the enterprise sector and the development and commercialisation of new healthcare technologies, products and services emerging from within the health service, and/or the enterprise sector.

HIHI acts as a broker between innovative companies and the health service, facilitating pilot and clinical validation studies that provide critical test beds to support Irish companies going to market leading to exports, jobs and better outcomes for patients. HIHI's 2018 call to Irish industry, "Enabling positive aging", closed with a 58 per cent increase over the previous call, with almost half being ICT connected health solutions.

HIHI also functions as an open door to healthcare staff to assess ideas to solutions they have encountered in their work. Innovation Workshops for healthcare staff will build a sustainable culture of improvement and innovation through education and will provide a pipeline of ideas from healthcare staff for HIHI to support. HIHI has also been working with TCD to develop a Diploma in Healthcare Innovation, which aims to be a catalyst in strengthening the innovation mind-set within the Irish healthcare landscape. Participants will be drawn from both healthcare services and industry and are expected to drive the adoption and embedding of innovation in the Irish healthcare system.

2019 DELIVERABLES

- (i) Convene a major GovTech Summit to explore the opportunities that GovTech could bring to the Irish Economy and set out an Action Plan for moving forward.
- (ii) Departments to submit and deliver priority digital plans covering individual and business services via the Digital Leaders Group, including the expansion of access to public services through MyGovID.
- (iii) Continued migration of Government Department's web content into one coherent and easy to use website, gov.ie, providing a one stop shop for accessing information on Government and its services.
- (iv) Implement priority actions under the Public Service Data Strategy - to include the commencement of the Data Sharing and Governance Bill, the development of a Digital Post Box service, the cataloguing of key data assets across the Public Service, the creation of a Data Governance Board, and the continued implementation of the Open Data Strategy.
- (v) Secure approval and progress procurement for the Electronic Health Record programme.
- (vi) Drive collaboration between the health service and the enterprise sector through the HHI:
 - a. Match winning companies from HHI's recent call with relevant clinical teams and oversee a study of each product in an Irish clinical setting.
 - b. Launch a Diploma in Healthcare Innovation and continue the provision of Innovation Workshops.
 - c. Complete mid-programme review of the economic, health and cultural impact of HHI.

Ambition 1.4: Establish Top Teams to realise opportunities presented by technological changes and the move to a low carbon economy

Understanding sector specific needs and taking the necessary actions to accelerate growth and remove barriers to development provides a powerful impetus to attracting investment and developing areas of potential. *Enterprise 2025* suggests that Government should work to identify then drive development for certain sectors which have particular potential for growth as our economy evolves. 'Top Teams' will be considered when significant opportunities are identified and require a multi-organisational response to accelerate sectoral growth and remove barriers to development. Top Teams will not be focused on foreign direct investment (FDI) or indigenous enterprises in isolation, rather, they will focus on a sector/sub-sector thereby creating links between MNEs and SMEs.

The aim is to have a limited number of Top Teams in operation at any one time and to avoid duplication with existing effective sector specific groups.

The characteristics of a Top Team would include:

- Having specific and clear terms of reference with a task driven agenda
- Being time limited
- Addressing barriers to sectoral development that require a multi-organisational response
- Being adequately resourced by a small core team, consisting of major stakeholders and influencers, and involving a senior level business development manager

A first step will be to identify a small number of suitable sectors; and develop terms of reference for, and establishment of; the Top Teams. Prioritisation in terms of sectors should be guided by the scale of the opportunity and the long-term economic importance.

Three areas have been identified for 2019. A Top Team on AI, will help implement the direction set out in the National AI Strategy and will focus on increasing Ireland's capability in developing AI as well as assisting enterprises to use AI to improve their products and services. A Top Team on GovTech could review the recommendations contained in the *Enabling Digital Ireland* report and consult with industry and academia on priority areas of potential focus to ensure Ireland fulfils its ambition to lead on GovTech. The Top Team on Offshore Renewable Energy will focus on leveraging the industrial / employment opportunities arising from the operationalisation of the offshore energy policy framework under the MAFA legislation.

2019 DELIVERABLES

- (i) Pilot Top Teams in the following areas:
 - a. Artificial Intelligence
 - b. GovTech
 - c. Offshore renewables
- (ii) Identify further areas of opportunity that would benefit from the creation of a Top Team.

Ambition 1.5: Increase the capacity of SMEs to engage in RD&I

At present RD intensity in Ireland is below the OECD average. RD&I capacity in many local firms is weak, thus reducing their ability to innovate and the diffusion of new technologies

from foreign firms located in Ireland.³² It is vital that innovative SMEs, who have little or no RD&I experience, develop and build their capacity to engage in RD&I. To address this need RD&I placement programmes will be expanded, or new programmes established, to provide SMEs with a temporary injection of expertise. At the same time, the ability of local firms to absorb new knowledge will also require investment in knowledge based capital and managerial skills.

The Government's new €500m *Disruptive Technologies Innovation Fund*³³ (DTIF), one of four funds under *Project Ireland 2040*, will play an important role. The DTIF will see investment in the research, development and deployment of disruptive technologies and applications on a commercial basis. The DTIF has shown us that there is a very strong appetite for collaborative RD&I projects spanning sectors, technologies, industry, higher education institutes and counties. The listing of the 27 successful DTIF projects confirms this. Under the first tranche of the fund, these 27 innovative projects will share over €75 million in funding out to 2021. The projects are in areas such as life sciences, medical devices, ICT, manufacturing, food, agriculture, energy sustainability and the creative industries. All the projects include collaborations between start-ups, SMEs, MNEs and academic institutions. Ireland has invested heavily in its R&D base and the strong, positive results of the DTIF are testament to this.

The Science Foundation Ireland (SFI) Future Innovator Prize is a new challenge funding opportunity seeking to support Ireland's best and brightest unconventional thinkers and innovators to develop novel, potentially disruptive, technologies to address significant societal challenges. The overarching ambition of the SFI Future Innovator Prize is to enable the development of disruptive STEM-led solutions to key national challenges.

2019 DELIVERABLES

- (i) Implement the projects awarded funding under the first call of the Disruptive Technologies Innovation Fund and issue a further call in 2019 drawing on the learnings from 2018.
- (ii) Commence a programme of challenge-based research and innovation initiatives through Science Foundation Ireland (SFI) starting with a new SFI Future Innovator Prize to encourage the development of novel, potentially disruptive, technologies to address significant societal challenges.
- (iii) Directly assist SMEs through the temporary injection of expertise through RD&I placement programmes including through Enterprise Ireland's (EI) graduate programmes and SFI Industry Fellowships.

³² [OECD \(2018\), OECD Economic Surveys: Ireland 2018, OECD Publishing, Paris](#)

³³ [Department of Business, Enterprise and Innovation - Disruptive Technologies Innovation Fund](#)

Ambition 1.6: Incentivise SMEs to invest in new technologies

Investment in capital equipment and new technologies is critically important for companies to improve their productivity, propensity to innovate and competitiveness.

Tax incentives are a critical lever for RD&I in Ireland which provides assistance across all enterprise sectors of our economy. We must maintain the important international advantage of operating a R&D tax credit as an important feature of a globally competitive research and innovation eco-system. However, the current design of the R&D tax credit may not be suitable for all SMEs.

Therefore, to promote investment in technology by both SMEs and larger companies, further policies to encourage take up of the R&D tax credit need to be considered. Another method of incentivising investment is by increasing the speed with which the taxpayer can receive the tax benefits of their capital investments. Other non-tax-based incentives may also need to be considered, particularly for SMEs who may not have the capacity or ability to avail of the R&D tax credit.

2019 DELIVERABLES

- (i) Consider (with input from industry) how the existing R&D tax credit meets the needs of SMEs and how it could be tailored to address their needs such as considering:
 - a. allowing for more extensive use of outsourcing by SMEs by amending the amount of outsourced expenditure which qualifies for the R&D tax credit, particularly with regards to encouraging collaboration with Higher Education Institutions;
 - b. amending the system of repayable tax credits for SMEs specifically to ensure that they receive the benefit in a timely and relevant period;
 - c. whether a separate R&D tax credit scheme is required for SMEs such as those available in other countries, for example to allow for a cash refund in full in the year of the claim and a higher level of credit to SMEs (who meet a predetermined definition); and
 - d. the eligibility of design expenditure under the RD&I tax credit relief.
- (ii) In the context of Budget 2020, evaluate proposals considering the feasibility of introducing a financial incentive, such as cash refunds (in one instalment) or non-tax-based incentive(s), to stimulate investment in SMEs' digital back office systems.
- (iii) In the context of Budget 2020, evaluate proposals around the introduction of a range of targeted accelerated capital allowances for investments in transformative technologies and in alignment with the Industry 4.0 Strategy.
- (iv) Commence a review of the EI R&D grant support scheme to assess its appropriateness, effectiveness and efficiency in delivery on its objectives.

Ambition 1.7: Develop Transition Teams to assist workers and sectors likely to be most challenged by our changing economy

While we must exploit the opportunities that arise on foot of technological and environmental developments, we must also accept that these changes will inevitably cause challenges for enterprises and workers. While some enterprises will be capable of transforming their business models and adapt to new realities, there is a real danger that some workers may find their job roles becoming redundant. The best way to ensure that a worker stays attractive in the labour market is for that person to develop skills valued by the labour market.

It is imperative that we look ahead and identify which job roles are vulnerable and develop a framework which helps the worker to upskill or retrain so that they can fulfil job roles that have a long-term future.

Following analysis and prioritisation of cohorts of vulnerable workers, i.e. workers in declining sectors or potentially obsolete or transforming job roles, relevant Departments and stakeholders will work to develop Transition Teams. Transition Teams will be established to deliver coordinated multifaceted programmes offering dedicated development assistance to workers in vulnerable job roles. These will include sessions offering career advice and skills assessments; agreeing development paths; identifying and agreeing training provision; and a tailored employment service.

The National Economic and Social Council (NESC) will develop policy recommendations for Transition Teams, drawing on the work of the EGFSN and the forthcoming paper on the regional impact of the transition to a low carbon economy.

2019 DELIVERABLES

- (i) Commission the National Economic and Social Council to develop policy recommendations for consideration by Government for the operation of Transition Teams to manage the impact of economic transition on vulnerable workers and sectors which might include:
 - a. developmental supports for enterprises and sectors faced with challenges arising from the move to a low carbon economy, sustainable business models and new technologies;
 - b. career advice and training guidance to managers and workers in sectors and job roles affected by future changes;
 - c. accessible training to upskill and retrain such workers including through Skills to Advance as well as tailored development plans for them; and
 - d. potential EU financial assistance opportunities for such a programme.



**Improving SME
Productivity**

Pillar 2. Improving SME Productivity

There have been strong increases in headline productivity figures in Ireland over the last fifteen years with labour productivity increasing by an average of 4.5 per cent annually between 2000 and 2016. A recent OECD-Department of Finance paper shows a positive productivity gap between Ireland and the euro-area average of 26 percentage points on a Gross Value Added (GVA)³⁴ per hour worked basis.³⁵

Ireland has successfully attracted many of the global frontier firms in terms of productivity. These firms are global leaders in innovation and management practices and attract highly-skilled labour from across the world. While this is to be welcomed, there is significant variation in productivity across sectors and between firms. The gap between the most productive firms and the least productive firms is widening, and most of the productivity gains have been concentrated in a small number of sectors that are largely foreign-owned, and in some of these sectors, in just a small number of large multi-national firms. For most firms, generally small and indigenous, there have been declines in productivity.³⁶

From a sectoral perspective, Pharma, ICT and professional and administrative services explain almost 90 per cent of the gap between Ireland and the euro-area average. Meanwhile, productivity in Ireland is lower than the euro area average in several domestic sectors such as construction, retail, accommodation and food services.³⁷

The reliance of the economy on a small number of large firms is a persistent risk that must not be ignored, particularly in the context of an increasingly globalised and competitive international market.³⁸

Significant work must be done to increase the absorptive capacity of SMEs to embrace innovation. Progress towards this goal can be made by promoting links between high performing firms and SMEs to increase positive interaction and collaborative working, ensuring existing supports for R&D are useful for smaller business, and investment in digital and managerial skills.

Future Jobs Ireland builds on the strategic actions in *Enterprise 2025 Renewed*³⁹, Ireland's national enterprise policy. *Enterprise 2025 Renewed* sets out the ambitions of the Government in terms of building enterprise resilience through greater emphasis on investments in productivity and innovation, in developing talent and in creating attractive places throughout Ireland so that we can fully realise the potential of our regions. It is also

³⁴ Gross Value Added is our Gross Domestic Product (GDP) less tax and subsidies

³⁵ Papa et al (2018), Patterns of firm-level productivity in Ireland, OECD Productivity Working Paper No 15, Paris

³⁶ Ibid.

³⁷ Ibid.

³⁸ [Papa \(2019\) What is behind aggregate productivity growth in Ireland? A granular approach, DBEI research paper, Dublin](#)

³⁹ [Department of Business, Enterprise and Innovation - Enterprise 2025 Renewed](#)

focused on increasing overseas trade and building greater levels of collaboration and clustering with foreign direct investment.

Targets

<i>KPI</i>	<i>Latest Scores</i>	<i>Baseline Date</i>	<i>2025 Target</i>	<i>Source</i>
<i>Multifactor productivity growth in domestic sectors</i>		2016	1% increase on average per annum	CSO

Measuring productivity can be technically challenging in general. In the Irish case, the challenge is compounded as the headline productivity metrics are distorted by the high levels of productivity in a small number of sectors, and within these sectors sometimes a small number of highly productive large multi-national enterprises. However, due to measurement issues and non-availability of detailed timely productivity data it is not straightforward to set targets by sector or size of firm.

Despite these issues, it is important that we show ambition for improving productivity in SMEs which are mostly Irish-owned. Therefore, to measure performance, *Future Jobs Ireland* will use the published CSO data to set an annual target of 1% per annum Growth in multi-factor productivity for the domestically owned sector.

Additionally, each of the specific domestically dominated sectors will also be monitored on an ongoing basis using the EU KLEMS database. These include the Construction; Wholesale and Retail; Agriculture, Forestry and Fishing; Transportation and Storage; and Accommodation and Food sectors.

CASE STUDY – PHOTONICS MANUFACTURING PILOT LINE

This DTIF-funded project, linking ICT and manufacturing, will build a physical Photonic Packaging Pilot Line in Ireland designed to fill the gap that exists today, i.e. to fabricate tens to hundreds of units. The Photonic Packaging Pilot Line Hub will:

- a) develop packaging designs tailored to fast, cost-effective packaging processes and equipment; and*
- b) develop and install next generation packaging equipment (including test) with reduced cycle-times.*

The partners in this project include Tyndall National Institute, Ficontec, MBRYONICS, Eblana Photonics, Sanmina Ireland, and Faztech. The enterprise partners in this project are located in Dublin, Galway and Cork.

Ambition 2.1: Diversify our enterprise base to ensure the Irish economy is more resilient and adaptable

Ireland's thriving FDI sector has been an essential contributor to Irish economic performance over many years and the attraction of FDI will continue to be a core part of Ireland's enterprise policy. As the global context in which Ireland competes for investment evolves amid political, economic and technological changes, we need to continue to develop Ireland's overall proposition to attract and retain FDI. *Future Jobs Ireland* will better position Ireland to address both the challenges and opportunities for FDI arising from a changed economic landscape.

Ireland's success in attracting FDI has resulted in deep links with the US with almost 70 per cent of the employment in IDA supported entities in US owned corporations. While this is positive, an overdependence on one market has risks so the IDA will continue to accelerate its diversification of source markets, doubling growth in project investments from non-US markets in the period 2018-2024.

Continuous targeted and seamless support (including the identification of any gaps in such support) for indigenous SMEs and start-ups, especially in emerging sectors, can help to ensure a more diverse enterprise base. This can be done through complementary advisory and support services such as financial incentives and soft supports provided by, for example, the Ireland Strategic Investment Fund (ISIF), Enterprise Ireland (EI), the Local Enterprise Offices (LEOs) and Údarás na Gaeltachta (ÚnaG). Increasing the availability of long-term equity to encourage the scaling up of SMEs is another approach. Long-term equity is where an investor is willing to make an investment in an enterprise with no expectation of a quick profit but in anticipation of considerable rewards in the longer term.

Enterprise Ireland's *Irish Advantage* campaign⁴⁰ is a new initiative to help companies diversify into new global markets. This is a digital platform and campaign to promote and connect international businesses with Irish companies. Industry experts in EI's international offices work with international firms collaboratively to understand their business challenges and then assemble a shortlist of qualified Irish partners who match and solve these challenges. They then make direct introductions to the right people in innovative Irish companies and facilitate the business partnership.

Our people are renowned for their creativity. The experience of the audio-visual sector shows the capacity of creative industries to expand and adapt and create quality jobs for the future. Further opportunities to develop the wider creative industries will be identified.

Promoting entrepreneurship helps to broaden our enterprise base. The Social Enterprise sector encourages job creation and economic growth in the fulfilment of its social objectives, and in that context the new *National Policy on Social Enterprise*, led by the Department of

⁴⁰ [Enterprise Ireland - Irish Advantage](#)

Rural and Community Development will be an important framework for the further development of social enterprises and social entrepreneurship.

In addition to this, as noted in the National Strategy for Women and Girls 2017-2020⁴¹, we must ensure that women realise their full entrepreneurial potential. This is a major priority for Enterprise Ireland. Through its new six-year female entrepreneurship strategy, EI will work to increase: the number of females that choose to start a business; the number of female founded high potential start-ups; and exports and jobs growth in female led companies. This builds on the supports already in place for female entrepreneurs developed in response to under-representation and research indicating the distinctive challenges faced by women in start-ups.

Furthermore, *Future Jobs Ireland* is also cognisant of other Government strategies to grow sectors of the economy such as the strategy for the development of the international financial services (IFS) sector. One of the priorities in the recent IFS strategy (*IFS2020*⁴²) and action plans is sustainable and green finance. Moreover, one of the growth foundation pillars of the forthcoming IFS strategy to 2025 is technology and innovation which integrates with *Future Jobs Ireland*.

2019 DELIVERABLES

- (i) Strengthen the capacity of Local Enterprise Offices (LEOs), in collaboration with Enterprise Ireland, to provide a comprehensive suite of supports for indigenous Irish businesses and entrepreneurs that will enable seamless and appropriate supports (including addressing any gaps in such supports) for ambitious and growth-oriented firms thereby achieving a step-change in enterprise productivity, innovation and resilience.
- (ii) Prepare for ISIF and EI to increase the availability of long term equity investment to support indigenous Irish companies in scaling their businesses.
- (iii) Open new Embassies and Consulates as well as expanding the overseas presence of our Enterprise Agencies to grow new export and investment markets.
- (iv) Increase take-up of supports among SMEs to improve competitiveness and enhance innovation, through targeted awareness raising campaigns for enterprises, including EI Global Ambition⁴³ campaign and support exporter diversification through the EI Irish Advantage campaign.
- (v) Initiate delivery of a new six-year strategy for female entrepreneurship aimed at:
 - a. increasing the number of females that choose to start a business,
 - b. increasing the number of female founded high potential start-ups, and
 - c. increasing exports and jobs growth in female led companies, by 2025.

⁴¹ [Department of Justice and Equality \(2017\), National Strategy for Women and Girls 2017-2020](#)

⁴² [IFS strategy](#)

⁴³ [Enterprise Ireland - Global Ambition](#)

- (vi) Identify opportunities in the wider creative industries sector and develop a roadmap for the support and enhancement of these industries.
- (vii) Publish and commence implementation of a National Policy on Social Enterprise which will support the development of social enterprise as part of the wider entrepreneurship ecosystem.

Ambition 2.2: Promote enterprise productivity as a driver of economic prosperity

To strengthen and promote productivity among Irish enterprise, we need to ensure it is a priority across Government. Firstly, to facilitate better analysis, we need to understand the drivers of productivity at aggregate and sectoral level. This should facilitate the development of tailored policy instruments to drive future productivity growth.

At the same time, we need to facilitate greater engagement with policy makers on productivity issues. In March 2018 the National Competitiveness Council (NCC) was given the role of National Productivity Board of Ireland. As part of this expanded remit, the NCC is responsible for analysing developments and policies in the field of productivity and competitiveness in Ireland. In this regard, the Government will formally respond to the NCC's priority recommendations to enhance Ireland's productivity and competitiveness.

2019 DELIVERABLES

- (i) Develop our understanding of the drivers of productivity at aggregate and sectoral level.
- (ii) Develop a plan to support the performance of Irish SMEs, start-ups and firms in emerging sectors building on the recommendations in the OECD Review of SME and Entrepreneurship Policies in Ireland.
- (iii) The Government will formally respond annually to priority National Competitiveness Council's recommendations to enhance Ireland's productivity and competitiveness performance.
- (iv) Increase take-up of supports among micro-enterprises and SMEs through LEOs' Making it Happen⁴⁴ campaign promoting competitiveness, productivity and innovation supports.

⁴⁴ [Local Enterprise Office - Making it Happen](#)

Ambition 2.3: Enhance business framework conditions for firm creation and growth

It is important that Government policy enables new high-potential businesses to enter markets and expand unimpeded, and that the most productive firms thrive in the market. To enhance business dynamism and ensure our continued competitiveness, some aspects of the regulatory environment for businesses require reform. It is also critical that the costs of crucial services inputs to business such as insurance, rates and legal services are competitive.

An example of how changes can be made to benefit SMEs is through the implementation of the SME Test. The SME Test puts the “Think Small First” principle of the *Small Business Act for Europe*⁴⁵ at the centre of policy making. The purpose of the SME Test is to ensure policymakers consider the negative impact of any relevant new legislation or regulation which may create a burden on SMEs. To apply the test, policymakers should: consult with SME stakeholders; identify affected businesses; measure the impact on SMEs; and assess alternative mechanisms and mitigating measures.

The insurance and personal injuries framework is another area that has been the subject of reform in recent years. The Cost of Insurance Working Group⁴⁶ was established by the Minister for Finance in 2016 to examine the factors contributing to the increasing cost of insurance and identifying what could help reduce this cost. This led to the publication of the *Report on the Cost of Motor Insurance*⁴⁷ in January 2017 and the *Report on the Cost of Employer and Public Liability Insurance*⁴⁸ in January 2018. Both reports contain recommendations targeted at improving the insurance sector generally. While progress has been made to date on the implementation of the recommendations, and motor insurance premiums have reduced by 22%⁴⁹ since their peak in July 2016, there are still some areas where recommendations need to be implemented. Given the impact insurance can have on competitiveness this ongoing work is important.

Arising from a recommendation of the Cost of Insurance Working Group, the Personal Injuries Commission⁵⁰ (PIC) published two reports in 2018. Its second and final report found that compensation payments for soft tissue injury claims in Ireland are typically 4.4 times that of the UK for similar claims. The PIC has recommended that, to address this differential, the soon to be established Judicial Council should be requested by the Minister for Justice and Equality to compile guidelines for appropriate general damages for various types of personal injuries. The PIC believes that the Judicial Council will, in compiling the guidelines, take account of the jurisprudence of the Court of Appeal, and the results of the PIC benchmarking exercise. This is a key recommendation of the PIC which if implemented should lead to

⁴⁵ [Small Business Act for Europe](#)

⁴⁶ [Cost of Insurance Working Group](#)

⁴⁷ [Cost of Insurance Working Group \(2017\) Report on the Cost of Motor Insurance](#)

⁴⁸ [Cost of Insurance Working Group \(2018\) Report on the Cost of Employer and Public Liability Insurance](#)

⁴⁹ [CSO, CPI December 2018](#)

⁵⁰ [Personal Injuries Commission](#)

greatly increased levels of consistency in awards, increase the frequency of early resolution of claims and reduce costs.

2019 DELIVERABLES

- (i) Remove any disproportionate burden on SMEs by applying the SME Test across Government Departments to any relevant new legislation or regulation(s).
- (ii) Publish the interim report on the Review of the Administration of Civil Justice.
- (iii) Commence the new business models for legal services, including new legal partnerships and limited liability partnerships.
- (iv) Amend the planning legislation to introduce reforms to the judicial review provisions relating to planning cases and streamline the planning procedures for Strategic Infrastructure Developments.
- (v) Progress the primary legislation required to provide an appropriate employment vetting regime for the Cyber Security sector.
- (vi) Complete the implementation of the Cost of Insurance Working Group's recommendations on the Cost of Motor Insurance and the Cost of Employer and Public Liability Insurance and ensure that relevant stakeholders implement the recommendations set out in the Personal Injuries Commission's two reports.
- (vii) Enactment of the Local Government Rates Bill 2018 to modernise the legislation governing commercial rates and to introduce targeted rates alleviation schemes.

Ambition 2.4: Encourage enterprises to exploit technology and business process improvements to increase productivity

Whilst we need to encourage our enterprises and workers to embrace new and disruptive technologies, there are many who are yet to exploit existing technologies to allow for more efficient work practices or processes and, therefore, become more productive. This could be through availing of, or updating, digital back office infrastructures such as cloud storage, online business models or Enterprise Resource Management (ERM) systems.

The European Investment Bank (EIB)⁵¹ notes that digitalisation is not just about investing in new IT equipment and systems. It includes increasing integration of ICT in all types of products; increasing automation in production helping to bring about gains in productivity and resource efficiency; and changing customers' behaviour through smart and connected products and services.

⁵¹ European Investment Bank, European Investment Advisory Hub Investigation into Development of Financing Models for the Digitalisation of SMEs, November 2018

The EIB also found that, almost 40% of traditional Irish indigenous companies completely lack digital assets (e.g. digitally stored content that comes with a right to use it such as software, databases, logos, media files, presentations and domain names). As a result, Ireland lags behind leading countries in terms of e-business processes and e-business technology adoption.

There is also evidence of a market failure in access to finance through traditional banking channels for digital investments in Ireland.⁵² To help address this issue, the Future Growth Loan Scheme⁵³ will provide funding for terms of eight to ten years for strategic investment, for example in assets to foster process and organisational innovation. It addresses a clearly defined market failure - the absence of the availability of long-term finance of more than seven years for investment. This scheme will be available to eligible SMEs and the primary agriculture and seafood sectors. Finance provided under the Future Growth Loan Scheme will be competitively priced and have favourable terms, for example no security required for loans up to €500,000.

Enterprise Ireland's Operational Excellence programme⁵⁴ supports established companies (SME and large) to address their competitive challenges and growth opportunities through a transformation project that would include investment in business innovation, capital equipment and or capability building through training. The project should involve a significant change in how the firm does business, for example for product line redesign using lean principles requiring new equipment and integrated software systems.

In addition to supports for financing such technologies, managers and workers may need to be assisted in developing the digital skills to take advantage of and use the technologies available to them.

Within certain sectors there may be specific technologies that will encourage improved productivity. For example, the use of Building Information Modelling (BIM) would cultivate productivity improvements in the construction sector. Analysis of productivity in certain sectors over time can inform new approaches for improvement and identify technologies to be exploited.

2019 DELIVERABLES

- (i) Launch the Future Growth Loan Scheme to provide long term debt financing for strategic investments.
- (ii) Support digital skills development within micro and SME management teams through existing e-marketing supports and assess the need for a potential Digital Skills Voucher Scheme.

⁵² Ibid.

⁵³ [Future Growth Loan Scheme](#)

⁵⁴ [Enterprise Ireland - Operational Excellence programme](#)

- (iii) Introduce the new EI Operational Excellence programme to enterprises targeting whole of company transformation including capital investment, implementation of new business innovation practices, and training.
- (iv) Conduct and publish an analysis of productivity in the construction sector to inform new industry approaches for improvement.
- (v) Develop an implementation plan for actions to stimulate construction sector productivity, including greater deployment of Building Information Modelling (BIM).
- (vi) Commence a study on the retail sector to understand the full extent and impact of disruption to pre-existing business models in light of digital transformation.
- (vii) Review the conclusions of the Freight Transport Association Ireland (FTAI) 'Project on the Cost of Distribution' to assist operators to focus on profitability and productivity, identifying and implementing actions arising for Government, where appropriate.

Ambition 2.5: Improve leadership and management skills in SMEs

The full potential productivity benefits of innovative technologies can only be realised if skilled managers can deliver complementary changes to organisational processes. However, data from the World Management Survey suggests that managerial skills in Ireland are poor compared to other high-income countries such as Germany, Sweden, and the UK.⁵⁵ The OECD note that managerial skills are relatively poor, weakening the potential for productivity spillovers to local firms.⁵⁶ This is an area where further training and skills are required to increase productivity in SMEs.

In 2019, research will be undertaken to quantify the comparative performance of managers in Irish SMEs. This will then allow us to identify any gaps or weaknesses that need to be addressed, including to training provision, and how these could be addressed.

There are several management development initiatives available to enterprise. Enterprises will be encouraged to participate in these programmes, particularly managers in micro-enterprises and SMEs. An example of where provision will be increased in this area is the Skillnet Ireland SME Management Development⁵⁷ programme and Springboard+ 2019.

A priority of Springboard+ 2019⁵⁸ is to provide opportunities for workforce development to enhance the skill levels of those already in employment; to increase the national rate of engagement in Lifelong Learning; and to reskill those whose current occupation may be at

⁵⁵ [OECD \(2018\), OECD Economic Surveys: Ireland 2018, OECD Publishing, Paris](#)

⁵⁶ [Ibid.](#)

⁵⁷ [Skillnet Ireland Management Development Programmes](#)

⁵⁸ [Springboard+](#)

risk from technological and other developments. It focuses on all skills categories where there is strong and clear evidence of a regional and national need and evidenced enterprise support. Assuming these conditions apply, the selection procedure for courses to be funded under Springboard+ 2019 will also focus on management and leadership skills.

2019 DELIVERABLES

- (i) Assess the comparative performance of managers in Irish SMEs against international best practice and identify gaps that need to be addressed.
- (ii) Deliver key business development programmes to senior and middle managers across the tourism sector.
- (iii) Expand Skillnet Ireland provision in leadership skills and management development skills in SMEs to support productivity growth and to support the absorption of new technologies by SMEs.
- (iv) Deliver targeted awareness campaigns for enterprises promoting management development and mentoring programmes.
- (v) Include management and leadership skills as a particular focus in the call for proposals under Springboard+ 2019.

Ambition 2.6: Strengthen linkages between SMEs and multinational enterprises and our tertiary education institutions

Multinational enterprises (MNEs) provide important indirect contributions in the form of learning opportunities or staff and technology transfer to domestic firms. Spillovers of this type could potentially increase the productivity performance of domestic firms and may work through several different channels such as demonstration effects, as domestic firms learn about new technologies and markets from the activities of MNEs, competition effects, and knowledge spillover effects through labour turnover. Even more direct spillover effects can arise from supply chain linkages between MNEs and local firms.

The large and widening productivity gap between foreign-owned and domestic firms suggests some weaknesses in the knowledge diffusion process in Ireland according to the OECD.^{59,60} While linkages need to offer competitive advantage, information barriers can discourage both SMEs and larger enterprises in their search for commercial partners. For these reasons, we need to increase linkages between indigenous enterprises and MNEs, for

⁵⁹ [Papa et al \(2018\) "Patterns of firm-level productivity in Ireland", OECD Productivity Working Paper No 15, Paris](#)

⁶⁰ [Di Ubaldo et al \(2018\) "Productivity spillovers from multinational activity to indigenous firms in Ireland, ESRI working paper No 587, Dublin](#)

example through Enterprise Ireland and IDA Ireland's 'Global Sourcing' initiative which aims to create business opportunities for Irish-owned companies with MNEs based in Ireland.

One of the core criteria for proposals under the Disruptive Technologies Innovation Fund⁶¹ (DTIF) was the inclusion of SME partners in project proposals. This resulted in projects of scale, with many of the successful proposals involving more than one SME. Building on this success, and to drive the collaboration agenda, the benefits of including a requirement to strengthen or develop linkages between SMEs, MNEs and or Higher and Further Education and Training Institutions should be explored in developing future funding calls.

Clusters and Clustering Initiatives

A cluster is defined as groups of firms, related economic actors, and institutions that are located near each other and have reached a sufficient scale to develop specialised expertise, services, resources, suppliers and skills⁶². Cluster initiatives, on the other hand, are about creating, maintaining, or upgrading an economic stronghold, by consolidating or further enhancing linkages.⁶³ *Ex post* evaluation of past European Regional Development Fund and Cohesion Fund programming has indicated that one of the most successful instruments for developing and supporting innovation in SMEs was the promotion of networking through clusters.⁶⁴ Participation in clusters facilitates SMEs to collaborate more easily and improves their absorptive capacity through best practice and knowledge sharing.

Project Ireland 2040 commits to build regional sectoral clusters to scale and internationalise enterprise in all regions. The development of Regional Innovation and Technology Clusters under this Plan will contribute to this, as well as allowing Enterprise Ireland to progress regionally focused initiatives linking SMEs and Institutes of Technology. The development of these clusters will support the national drive towards increasing enterprise potential and performance in all regions and close the gap in regional productivity levels.

Technology clusters will further enhance the capability of the Institutes of Technology, in a planned way, creating centres of excellence for both generating high-levels of entrepreneurship and spin-outs in the regions. They will also support firm-level innovation, productivity, scaling and internationalisation.

2019 DELIVERABLES

- (i) Commence an evaluation of the Global Sourcing Initiative in order to identify ways to increase its reach (including to LEO clients) and impact.
- (ii) Develop a Regional Innovation and Technology Clustering Programme to link SMEs and Institutes of Technology.
- (iii) Develop new and existing clusters or innovation districts to support best practice sharing and knowledge development such as:

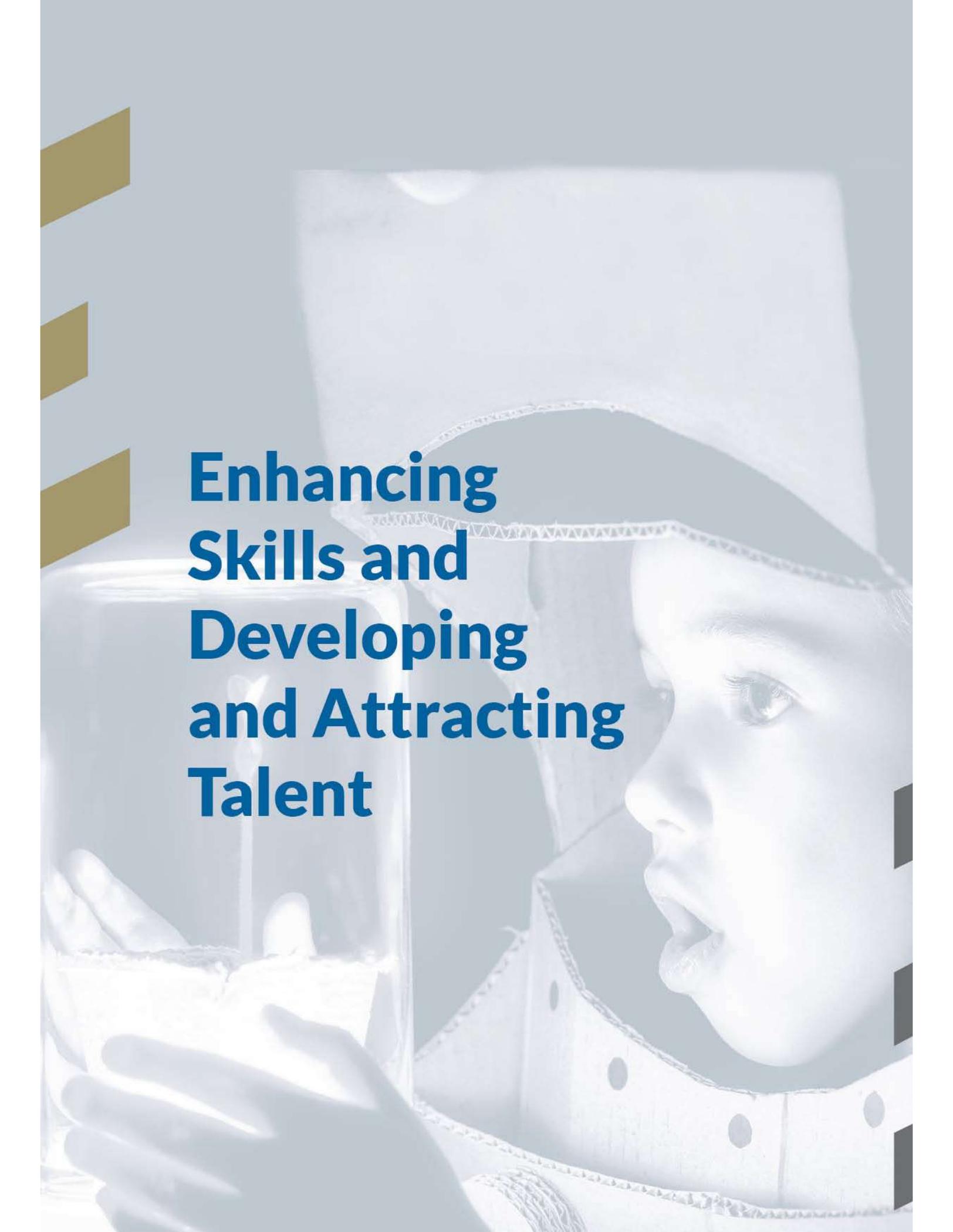
⁶¹ [Department of Business, Enterprise and Innovation - Disruptive Technologies Innovation Fund](#)

⁶² [Smart Guide to Cluster Policy, Guidebook Series – How to support SME Policy from Structural Funds, European Commission, 2016](#)

⁶³ *Ibid.*

⁶⁴ [Ibid.](#)

- a. the Innovation District Advisory Group will develop a vision and recommend a roadmap and governance structure for a globally competitive innovation district, centred around the Grand Canal Dock area, which would act as a magnet for talent, investment, innovation, industry and research;
 - b. Cyber Ireland, a cybersecurity cluster in Cork, which aims to position Ireland as a leading location for cybersecurity expertise; and
 - c. the Atlantic Economic Corridor initiative which seeks to maximise the enterprise assets along the western seaboard from Kerry to Donegal, and to combine the economic hubs, clusters and catchments of the area to attract investment, improve competitiveness and support job creation.
- (iv) Identify relevant Government funds/programmes where it would be appropriate to consider the inclusion of a requirement to strengthen or develop linkages between SMEs, MNEs and or Higher and Further Education and Training Institutions, in future competitive funding calls.

A young child wearing a white paper astronaut suit is looking intently into a glass beaker. The beaker contains a white, textured substance, possibly a mixture or a model. The child's expression is one of curiosity and focus. The background is a soft, light blue gradient. On the left side, there are three gold-colored diagonal bars. On the right side, there are two black diagonal bars.

Enhancing Skills and Developing and Attracting Talent

Pillar 3. Enhancing Skills and Developing and Attracting Talent

Ireland is known for having a well-educated workforce, with the highest share of workers with a third level degree in the EU. The high quality of Ireland's workforce has been an enabler of our economic development and, more recently, our recovery since the recession. Ireland's skilled migrant labour force has greatly contributed to our economic recovery and added diversity in the work place which has also given our enterprises greater capabilities in export markets. However, we cannot afford to be complacent in the face of the changes likely to occur in Ireland's labour market in the coming decades. This requires a continued emphasis on how well the education and training system delivers as well as augmenting our workforce through attracting skilled workers from outside of Ireland.

The revolution in automation and digital technologies will radically reshape industry as we know it. Today's school children will be employed in jobs that do not yet exist. Given the current and accelerating move towards automation and AI, it is likely that Ireland will need to rebalance its skills mix towards the most in demand skills, for example advanced cognitive and social and emotional skills. Post degree courses in AI, designed for industry, have recently commenced as have shorter targeted diploma courses designed to inform the business community on the benefits available from digitalisation.

Soft skills, transversal skills⁶⁵ (e.g. communication skills, organisational skills, self-motivation) and the mastery of core competencies in numeracy, literacy and digital technologies are critical for work in all sectors, and opportunities to develop and enhance these skills are vital. Advanced cognitive skills, problem solving, logic, social and emotional skills are particularly important in the development of competences needed to adapt to and respond to the changes that may occur due to technological advancement. Students and learners at all levels of the education and training system need to be given the opportunity to acquire these skills both during their initial formal education and throughout their lives.

Creative skills will also be vital. Working collaboratively, the Government's *Creative Ireland Programme*⁶⁶ is promoting a society in which knowledge and creativity are equal partners in the formation of our young people and where schools can support creativity and innovation in teaching and learning in an integrated way.

⁶⁵ UNESCO define transversal skills as those typically considered as not specifically related to a particular job, task, academic discipline or area of knowledge but as skills that can be used in a wide variety of situations and work settings. These include critical and innovative thinking; Inter-personal skills (e.g. presentation and communication skills, organisational skills, teamwork, etc.); Intra-personal skills (e.g. self-discipline, enthusiasm, perseverance, self-motivation, etc.); Global citizenship (e.g. tolerance, openness, respect for diversity, intercultural understanding, etc.); and Media and information literacy such as the ability to locate and access information, as well as to analyse and evaluate media content.

⁶⁶ [Creative Ireland Programme](#)

The availability of workers and enterprises with the right skills for emerging jobs plays not only a critical role in initiating the transition to the digital and low carbon economies, but also in enabling a just transition. Without a suitably trained workforce the transition will be challenging. Clear options must be available for workers in vulnerable sectors to upskill or retrain.

We need to enhance Ireland's lifelong learning provision to help workers re-skill throughout their working lives. While Ireland has improved its ranking for lifelong learning in recent years, there is still considerable scope for improvement. In addition to improving provision of lifelong learning solutions, the engagement of enterprise with providers will be critical to successfully adjusting to the future economy.

Future Jobs Ireland will complement the *National Skills Strategy 2025*⁶⁷ which aims to improve the relevance of skills provision to society and the economy; more effective engagement with employers in skills development; lifelong learning; the quality of teaching and learning; participation in education and training and the labour market; and skills supply. The issues of lifelong learning and participation are particularly relevant to the *Future Jobs Ireland* agenda. Lifelong learning has been identified as critical to enabling the transition of workers into new roles and sectors as automation and decarbonisation reshape the economy.

The *National Skills Strategy 2025* also includes a focus on developing a strong mix of transversal skills and subject knowledge among students at all levels. All specifications for Leaving Certificate subjects and courses developed in recent years identify the development of students who are confident, engaged, resourceful and active learners as a priority, ensuring that assessment modalities support learning and provide evidence of learning transversal skills and knowledge.

In addition, strategies such as the *Action Plan for Education*⁶⁸, the *Digital Strategy for Schools 2015 – 2020*⁶⁹, *ICT Skills Action Plan – Technology Skills 2022*⁷⁰ and *Creative Youth*⁷¹ also complement the *Future Jobs Ireland* agenda by putting a greater focus on equipping Irish learners (from primary school through to third level), workers and graduates with the necessary Science, Technology, Engineering, Arts and Mathematics (STEAM) skills to adapt to the changing workplace and business models of the future.

⁶⁷ [Department of Education and Skills - National Skills Strategy 2025](#)

⁶⁸ [Department of Education and Skills - Action Plan for Education](#)

⁶⁹ [Department of Education and Skills - Digital Strategy for Schools 2015 - 2020](#)

⁷⁰ [Department of Education and Skills - ICT Skills Action Plan Technology Skills 2022](#)

⁷¹ [Government of Ireland \(2017\), Creative Youth](#)

Targets

<i>KPI</i>	<i>Latest Scores</i>	<i>Baseline Date</i>	<i>2025 Target</i>	<i>Source</i>
<i>Lifelong learning rate</i>	8.9%	2017	18% ⁷²	EuroStat
<i>% of population with basic or above basic digital skills</i>	48%	2017	≥ EU Average ⁷³	DESI index Eurostat
<i>Cost of all Structured, Formal Training as a percentage of payroll in Irish enterprises</i>	1.1%	2016	1.5%	ABSEI

CASE STUDY – SHAPING YOUR FUTURE: 3D PRINTING AND AUGMENTED REALITY

Science Foundation Ireland, through its SFI Discover Programme, aims to develop a highly-engaged and scientifically-informed public. Through the SFI Discover Awards, it provides funding for projects that inspire and guide the best in Science, Technology, Engineering and Mathematics (STEM) education and public engagement.

41 diverse initiatives will be supported by this year’s programme, with successful awardees being carefully selected through international peer-review. A further 11 projects that were successful in 2017 will also have their funding continued for a second year.

Shaping Your Future: 3D Printing and Augmented Reality is one of the initiatives supported by the SFI Discover Programme. This initiative aims to harness the use of new advanced manufacturing technologies as an approach to make careers in manufacturing and STEM more appealing to students.

‘Shaping Your Future’ is a joint pilot project between the I-Form Advanced Manufacturing Research Centre and Irish Manufacturing Research (IMR). The programme combines hands-on making, design thinking and innovation challenges for students, using high-tech tools while teachers, through lesson plans, will be supported to bring 3D printing back to the classroom.

⁷² EU target is ≥15%. This target is published in Ireland’s National Skills Strategy 2025

⁷³ EU average in 2017 was 57%

Ambition 3.1: Provide high quality and timely education and training responses to evolving enterprise and skills needs

We need to ensure flexibility in skills provision to meet the emerging needs of enterprise and to address how the wider education system responds to the needs of the future economy.

The National Council for Curriculum and Assessment (NCCA) is currently carrying out a major review of second level Senior Cycle programmes. Part of this review involves thinking about the future – the purpose of senior cycle, looking at what students will need from the senior cycle in the years to 2030 in order to succeed and actively participate in an ever-changing world, and achieve their full potential. The review is also examining the range of learning programmes and learning pathways available to students at senior cycle and looking at how to improve flexibility and choice for students.

As the NCCA review progresses, the Department of Education and Skills continues to introduce new subjects. This includes the introduction of Leaving Certificate Computer Science (currently being piloted) which should help increase the numbers choosing to study undergraduate computer science courses. It should also positively impact the high dropout rate at third level computer science which has been partially attributed to a lack of understanding of computer science as a subject when finalising CAO applications.

Budget 2019 announced a new Human Capital Initiative that will involve investment of €300 million in higher education over the 5-year period from 2020 to 2024, with €60m being made available in each of those years. This investment will be funded by the National Training Fund (NTF) surplus. A major objective of the Initiative is to incentivise continued reform and innovation drawing on international best practice through, for example, graduate conversion, accelerated course completion, flexible and blended learning, intensified focus on employability and strengthened linkages and relationships with enterprise. It represents a significant response to projected demographic pressures impacting on the Higher Education sector over the next five years as highlighted in the Expert Group Report on Future Funding of Higher Education. The new Fund will also be an important element of the Government's strategic response to Brexit and other challenges facing the economy. The first call under the new Initiative will issue in 2019.

The NTF is also being reformed to make it more labour market focused, responsive to skills needs and providing additional investment in Further and Higher Education. This will include exploring the development of a new pilot programme for SMEs that may not have taken part in training or upskilling/reskilling previously.

IDA Ireland is working closely with Skillnet Ireland on a range of training initiatives that are critical to adapting to the skills needs of tomorrow. These include a Masters in AI geared to those in employment; the Global Business Services programme; Robotic Process Automation; and the Cybersecurity Skills Initiative a joint programme led by Skillnet Ireland (through Technology Ireland ICT Skillnet) and involving IDA, EI and other stakeholders.

It is vital that we have a stream of work ready graduates and researchers to meet the emerging needs of enterprise. Enterprise Ireland have established a Pilot Industry Graduate programme to leverage the existing links between the Technology Centres and their client company base and beyond. The pilot provides a new pool of industry ready people that can 'hit the ground running' in SMEs and address the skills and absorptive capacity gaps experienced by many companies. In 2019, the pilot will support Graduates in two Technology Centres.

Science Foundation Ireland (SFI) Centres for Research Training will provide funding for the training of PhD and Research Masters students in areas of identified skills needs. Building on research excellence, the purpose of the Centres will be to provide groups of academically outstanding future research leaders with the skills and knowledge needed to address the challenges of an ever-changing work environment.

2019 DELIVERABLES

- (i) Initiate a competitive call for proposals in line with the new Human Capital Initiative that will involve investment of €300 million in higher education over the 5 year period from 2020 to 2024, with €60m being made available in each of those years.
- (ii) Reform the National Training Fund (NTF) to align more directly with the changing skill requirements of the Irish labour force.
- (iii) Scope a new pilot programme for SMEs engaging in upskilling and training for the first time.
- (iv) Develop digital literacy in our young people by
 - a. progressing the development of the new primary school mathematics curriculum to include computational, flexible and creative thinking skills; and
 - b. exploring approaches to coding in an Irish context, to inform the redevelopment of the primary school curriculum.
- (v) Expand Skillnet Ireland provision in high demand areas as evidenced by EGFSN Skills Forecasting such as AI/Cognitive systems, AR/VR, robotics, blockchain and cybersecurity.
- (vi) Introduce the SFI Centres for Research Training Programme for PhD and Masters students for the 2019/20 academic year.
- (vii) Strengthen the pipeline of talent in scientific research through the launch of a new SFI Frontiers for the Future programme to support excellent individual researchers.
- (viii) Commence work on new awards made under the SFI / Engineering and Physical Sciences Research Council (UK) Centres for Doctoral Training partnership to train engineers and scientists with the skills, knowledge and confidence to tackle today's evolving issues and future challenges.
- (ix) Commence EI's Pilot Industry Graduate programme supporting Graduates in two Technology Centres to provide a new pool of industry ready people in SMEs to help address skills and absorptive capacity gaps.

- (x) Develop responses to the critical regional skills needs identified by Irish enterprises through the Skills for Growth initiative and Spotlight on Skills programme.
- (xi) Develop a strategic cohesive approach to upskilling across the audio-visual sector including supporting companies in retaining and fully exploiting their intellectual property.
- (xii) Develop appropriate requirements and solutions to ensure that the new regional uplift in the film tax relief delivers a highly skilled audio-visual workforce in the regions.

Ambition 3.2: Encourage lifelong learning and upskilling

The pace of technological change means that workers across skill levels must be prepared to reskill and upskill throughout their working careers, or they face the possibility of being left behind.

We must significantly increase the levels of lifelong learning in Ireland to help ensure that the next generation of workers are equipped to create and work with technologies that do not yet exist. The workers of the future must be adaptable and resilient with strong transversal skills.

SMEs are particularly affected by the issue of lifelong learning, as their staff can be less likely to participate in continuing formal education and training than larger firms. This suggests that there is a need for specific solutions focussed on SMEs.

High-quality lifelong learning programmes can improve and expand the skills of current workers, and allow them to receive training whenever needed, to help them change fields or as part of efforts to improve the quality of their jobs.⁷⁴ Budget 2019 provided funding for 5,000 new lifelong and flexible learning opportunities, with the majority of these free of charge.

We need to enable enterprises, and SMEs in particular, to invest in upskilling their workforce, including their managerial capacity, to enhance and maintain productivity; to adapt to technological disruption; and to identify and exploit opportunities from the digital and green economies as they emerge.

Policies and initiatives such as Skills to Advance⁷⁵ and Upskilling Pathways – New Opportunities for Adults⁷⁶ will support those with lower skills levels, while the EXPLORE Programme⁷⁷ will focus on the over 35s who have not previously engaged with Lifelong

⁷⁴ [OECD, The Productivity-Inclusiveness Nexus, 2018](#)

⁷⁵ [Skills to Advance](#)

⁷⁶ [European Commission - Upskilling Pathways – New Opportunities for Adults](#)

⁷⁷ [EXPLORE](#)

Learning. At the same time, Springboard+⁷⁸ will continue to provide training in emerging new technologies that may include blockchain, AI and robotics.

2019 DELIVERABLES

- (i) Develop mechanisms for formal recognition of prior learning of employees' skills through the Recognised Prior Learning (RPL) system.
- (ii) Conduct a study to identify any barriers in workplaces which inhibit employees from undertaking training.
- (iii) Implement 'Skills to Advance' which will support employees who have lower skills levels to remain or to advance in their careers.
- (iv) Implement Upskilling Pathways – New Opportunities for Adults which aims to help low skilled adults acquire literacy, numeracy and digital skills.
- (v) Develop Springboard+ 2019 training in emerging new technologies, as identified by industry's needs, such as blockchain, AI and robotics.
- (vi) Use flexible provision where possible by providers of Springboard+ training to ensure that the courses suit the needs of those in employment.
- (vii) Implement the EXPLORE Programme to help address the issue of Ireland's low level of participation in lifelong learning, particularly targeting persons over 35 years of age in manufacturing employment through improving digital and transversal skills.

Ambition 3.3: Foster participation in apprenticeship and traineeship programmes

Apprenticeships and traineeships provide a valuable alternative training format to traditional third level education. We will continue to enhance apprenticeships and traineeships and increase the number of people taking part in these programmes, in particular in areas where skills needs have been identified or in response to opportunities arising in sectors or sub-sectors, for example in the audio-visual industry. This will ensure we are preparing our people for new skills and occupations and that our enterprises have a continued pool of talent.

The *Action Plan for Education* committed to enrolling 50,000 people on apprenticeship and traineeship programmes in the period 2016-2020, representing more than a doubling of apprenticeship and traineeship activity by 2020. The achievement of these ambitious targets requires commitment from stakeholders, including parents and learners, and strong employer demand.

⁷⁸ [Springboard](#)

The recently published *Review of Pathways to Participation in Apprenticeship*⁷⁹ identified five areas of action which will be prioritised throughout 2019.

Communications campaigns targeted at both potential apprentices/trainees and employers along with a new online marketplace for apprenticeship opportunities will help to support our ambitions in this area.

2019 DELIVERABLES

- (i) In partnership with industry, continue to expand apprenticeship and traineeship offerings to meet identified and emerging skill needs and to prepare people for new occupations.
- (ii) Deliver a communications campaign to promote apprenticeships amongst businesses and the public including refocusing the Generation Apprenticeship Campaign on employers.
- (iii) Introduce a new online marketplace for apprenticeship opportunities.
- (iv) Implement actions in the Review of Pathways to Participation in Apprenticeship.

Ambition 3.4: Compete successfully for international talent

Ireland competes for international and mobile talent. We must ensure that our economic migration systems are fair, effective and efficient so that we can attract skilled workers from abroad.

This includes an ongoing focus on the Employment Permits system operated by the Department of Business, Enterprise and Innovation and the Visa system operated by the Irish Naturalisation and Immigration Service.

Career-FIT is a postdoctoral fellowship programme, part-funded by Horizon 2020 and part funded by Enterprise Ireland. A core feature of Career-FIT is the opportunity for experienced researchers from outside Ireland to develop their careers in market focused applied research through 3-year fellowships with secondment into industry through Ireland's Technology Centres. A second call under this programme will be initiated in 2019.

2019 DELIVERABLES

- (i) Implement the recommendations of the 2018 Review of Economic Migration Policy⁸⁰ to ensure that the employment permit regime remains fully supportive of the Ireland's labour market needs, be they skills or labour shortages in certain sectors.

⁷⁹ [Review of Pathways to Participation in Apprenticeship](#)

⁸⁰ [Department of Business, Enterprise and Innovation – Review of Economic Migration Policy 2018](#)

- (ii) Ensure that all aspects of the process for granting permission to work for the spouses and partners of Critical Skills Employment Permit holders is as streamlined as possible.
- (iii) Deliver the second call of Career-FIT which injects international researchers into Irish industry.
- (iv) Report on the perceptions and attractiveness of Ireland as a place to live and work among students and young adults across the European Union post-Brexit.

Ambition 3.5: Improve career guidance and advice provision

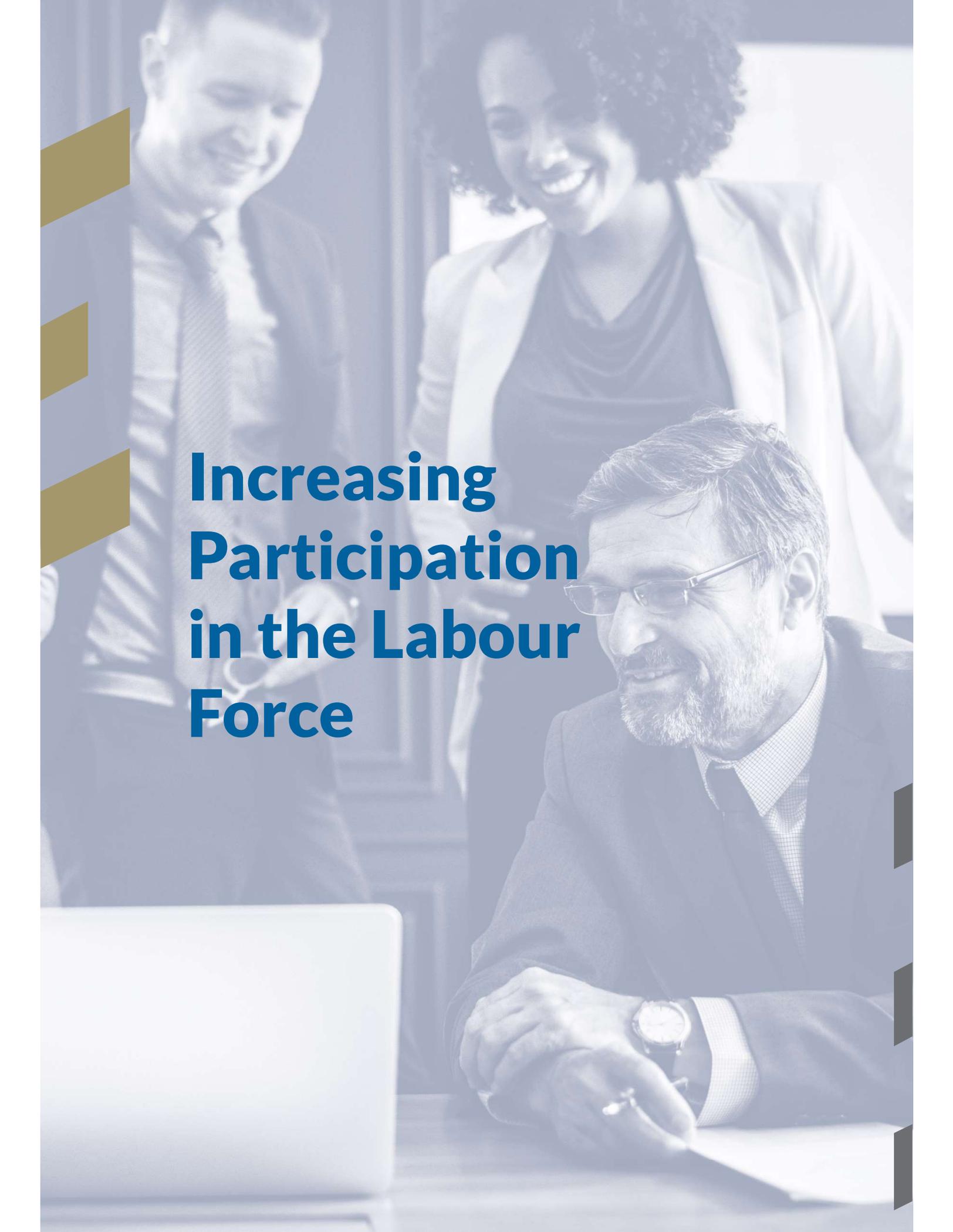
As the jobs and skills landscape changes, appropriate career guidance for young people and career advice for employees must be provided. This will help them to make better decisions about their career options in the face of a rapidly changing employment market.

The Review of Career Guidance will be published in 2019 and a plan to implement its recommendations developed. For the first time the career advice service provided through the Public Employment Service Intreo⁸¹, will assist those currently working who may be particularly impacted by technological and other changes. In 2018, the Department of Employment Affairs and Social Protection developed links between DEIS schools and two of its Divisions. In 2019 this initiative will be developed further across the Public Employment Service allowing more students to plan their career paths from a young age.

2019 DELIVERABLES

- (i) Enhance the career advice service provided through the Public Employment Service to include offering support to those currently in employment who may need to identify new opportunities as a result of technological and other changes.
- (ii) Publish the Review of Career Guidance and develop a plan to implement its recommendations.
- (iii) To help students career plan from a young age, develop further links between DEIS schools and the Intreo Service across the Public Employment Service.

⁸¹ [INTREO](#)

A blue-tinted photograph of three business professionals in an office setting. A man in a suit and tie stands on the left, smiling. A woman in a light-colored blazer stands in the center, also smiling. A man with glasses and a beard sits at a desk in the foreground, looking at a laptop. The background is slightly blurred, showing office furniture and a whiteboard.

Increasing Participation in the Labour Force

Pillar 4. Increasing Participation in The Labour Force

Nowhere is Ireland's economic recovery more evident than in the labour market. At over 2.2 million, there are more people employed in Ireland than ever before. Unemployment has declined to pre-recession levels in many areas and earnings are growing.

However, we cannot be complacent about this performance, the very success of which has contributed to growing pressures on our economy. Growing demand for labour and skills is interacting with the structural constraints on our labour market. Unchecked, this will push labour costs higher and risk over-heating parts of our economy. To respond to these pressures and avoid the mistakes of the past, we must ensure our labour market is responsive to the needs of our citizens and businesses.

A responsive labour market is important for many reasons. First and foremost, enabling people to enter the labour market will help raise living standards in a sustainable way for all our citizens. Second, improving participation levels for all groups will help mitigate the risk of overheating the economy by increasing labour supply, addressing skills shortages and managing labour costs. Thirdly, by improving labour market performance we are enhancing the resilience of our economy. This means we will be better positioned to withstand growing economic uncertainty abroad, to drive the decarbonisation of the economy and to adapt to the growing role of automation and digitalisation.

Improving participation rates means a more equitable, balanced and sustainable development of our workforce. Policies must differentiate between the different needs of people as well as the different barriers to participation. For example, those attempting to re-enter the workforce may need flexibly delivered training to refresh their skills. Similarly, employers offering greater flexibility in terms of work patterns are more likely to attract workers with caring or other responsibilities in a highly competitive labour market. Employers may also need to revisit their approach to employing older workers and people with disabilities.

Targets

KPI	Latest Scores	Baseline Date	2025 Target	Source
Overall participation rate 25-69	74.7%	2018	78%	LFS
Female participation rate 25-59	75.0%	2018	78%	LFS
Older Peoples participation rate (>55)	34.3%	2018	>38%	LFS
Youth unemployment ratio ⁸²	6.4%	2017	<6%	LFS

CASE STUDY – SKILLNET IRELAND’S WOMEN REBOOT PROGRAMME

The Women ReBOOT programme tackles two major challenges for the technology sector: sourcing the talent and skills needed for greater industry growth as our economy approaches full employment and also helping to resolve the gender imbalance with the technology sector. Fully funded by Skillnet Ireland, and delivered in partnership with Technology Ireland Software Skillnet, Women ReBOOT has succeeded in tapping into the rich pool of talented women that have left the technology sector.

Supported by forty technology employers, the programme delivers upskilling and career management supports, combined with the guarantee of a work placement. Running at a conversion rate to employment of 85 per cent and with over 100 women having completed the programme to date, ReBOOT is a great example of how an enterprise led approach, combined with the right agency assistance, can solve complex skills challenges.

Ambition 4.1: Encourage participation in the labour force through high-quality Early Learning and Care

The cost and availability of high-quality Early Learning and Care arrangements is one of the barriers to parents, and particularly mothers, being part of the labour force. To complement the implementation of the Affordable Childcare Scheme, additional ways to reduce costs, enhance supply and improve quality will be introduced. These include ensuring we are

⁸² The youth unemployment ratio is the ratio of unemployed 15-24 year olds to all 15-24 year olds, both active and inactive, which is 6.4%. The ratio is intended to provide a deeper understanding about the overall labour market situation of young people, accounting for the higher propensity of this cohort to be in full-time education.

prepared by analysing the future demand and availability of Early Learning and Care places as well as looking at how we can ensure high quality but affordable provision.

*First 5*⁸³, Ireland's strategy for Babies, Young Children and their Families also reflects these goals. It identifies five major areas of action including: a broader range of options for parents to balance working and caring; a new model of parenting support; new developments in child health, including a dedicated child health workforce; reform of the Early Learning and Care and School-Age Childcare system; and a package of measures to tackle early childhood poverty.

2019 DELIVERABLES

- (i) Introduce the Affordable Childcare Scheme to publicly subsidise high-quality Early Learning and Care.
- (ii) Develop a strategic capital investment plan to ensure that the demand for high-quality Early Learning and Care places is met.
- (iii) Publish a Childminding Action Plan to give parents greater access to subsidised home-based Early Learning and Care.
- (iv) Explore mechanisms to control fees charged to parents as part of the development of a new funding model for Early Learning and Care.
- (v) Review the existing Guidelines on the use of School Buildings *outside of School Hours* in consultation with school management bodies for schools to facilitate the use of school buildings for after school care/clubs.
- (vi) Promote uptake of accelerated capital allowances to incentivise employers to provide Early Learning and Care facilities for the use of their employees, by providing an accelerated deduction for the capital investment costs incurred.

Ambition 4.2: Foster participation in the labour force through flexible working solutions

As the nature of work and society changes, the way we organise work must also. Flexible working encompasses a wide range of practices including part-time, remote working, compressed hours, home-working and job sharing. A labour market which offers flexible working solutions can result in a win, win, win for employers, workers and society.

For the employer, benefits include greater attraction of workers from a larger pool of talent especially valuable in a tight labour market, staff retention, a more motivated workforce with fewer sick days and greater productivity.

⁸³ [Department of Children and Youth Affairs - First 5](#)

Flexible working offers tangible benefits for employees including a better work life balance and can provide solutions for those who would otherwise take unpaid parental leave but cannot afford to do so.

Flexible work assists in the development of an inclusive society. By removing some of the barriers to work for people with caring responsibilities, and providing a framework for flexible retirement, increasing flexible working could improve labour market participation, particularly amongst people with caring responsibilities, older people and people with disabilities.

In late 2019, paid parental leave will commence providing each parent with two weeks paid leave from work in the first year of their child's life. This will be extended over the coming years. Unpaid parental leave is also being extended for children up to the age of 12.

2019 DELIVERABLES

- (i) Undertake research on the prevalence and types of remote working arrangements within the Irish workforce, and the attitudes towards such working arrangements, as well as the factors which inhibit employers and employees to partake in such arrangements.
- (ii) Develop guidance to facilitate employers to offer more family-friendly working options, promoting the adoption of flexible and or remote working solutions and structures for parents.
- (iii) Commence a national consultation on the extension of flexible working options to all employees.
- (iv) Extend provision for unpaid Parental Leave and amend the upper age limit of the child for which the leave can be taken from 8 to 12 allowing for greater flexibility for parents.

Ambition 4.3: Improve incentives to participate in the labour force

Participation rates have improved recently after declining during the recession but are still some distance behind the best performers at European level. In particular there is room to improve amongst certain groups, including women, older workers and people with disabilities.

To incentivise and, ultimately increase, the number of people working, we will review, and reform as required, the rules and operation of existing welfare schemes. This includes supporting fuller working lives through the Roadmap to Pensions Reform 2018-2023⁸⁴ and

⁸⁴ [Roadmap to Pensions Reform 2018-2023](#)

examining the impact of the current tax arrangements on women and second earners working.

The Make Work Pay⁸⁵ report was published in April 2017 to identify how people with disabilities could be supported into employment. Make Work Pay included a recommendation on applying the principle of early engagement across all illness and disability schemes. Early engagement means that people with a disability who are able to work and interested in getting a job are offered every possible support at the earliest possible opportunity to fulfil their employment goals.

Early engagement is critical to support initial employment or early return to work before joblessness becomes established. For those who want to and are able to work, critical points are when young people with disabilities leave education, or when an adult experiences onset of a disability in the course of working life. In pursuit of this, an implementation and communications plan will be developed around applying the early engagement approach and the early engagement principles identified with stakeholders as part of the consultation process.

2019 DELIVERABLES

- (i) To improve employment outcomes for people with disabilities
 - a. publish the results of the consultation exercise around the recommendations on early engagement and Disability Allowance (DA) realignment from the Make Work Pay report;
 - b. develop an implementation and communications plan around applying the early engagement approach; and
 - c. consult with disability stakeholders about the implementation plan.
- (ii) Reduce disincentives for those who wish to work longer by considering options such as:
 - a. Deferral of State pension contributory on an annual basis to include actuarial increases in payment;
 - b. Facilitating those without a full social insurance record to increase their retirement provision by choosing to continue making PRSI contributions beyond State pension age and up to the actual date of retirement; and
 - c. Review barriers to older workers participating in the labour market.
- (iii) Consider income tax arrangements for second earners that optimise financial incentive to work, taking account of the impact that the income tax system may have on female participation in the workforce.

⁸⁵ [Making Work Pay, 2017](#)

Ambition 4.4: Encourage adult dependents and beneficiaries of other full-time welfare payments to engage in activation, enter and/or stay in the workforce

In the context of emerging labour and skills shortages, it is vital that we enable the Public Employment Service to engage with more non-jobseeker welfare beneficiaries as well as optimising the operation of non-jobseeker schemes to promote higher levels of participation in the labour force.

Supports that could be provided to help adult dependents and beneficiaries of other full-time welfare payments to engage in activation and staying in the workforce include a return to work service to provide tailored advice and information to returnees including on skills requirements, training options, and available supports. This will allow those who may have been out of the workforce for a number of years, through choice or necessity, feel more confident and supported in returning to work.

The Youth Employment Support Scheme (YESS)⁸⁶, a work experience placement programme specifically targeted at jobseekers aged 18-24 who are long-term unemployed or who face barriers to employment, commenced in late 2018 and now has around 200 participants. The scheme will be expanded to allow even more young people to become part of the labour force. The YESS aims to provide jobseekers with the opportunity to learn basic work and social skills while on a work placement. The scheme provides a supportive structure and environment for participants, including case officer support.

The Department of Justice and Equality's Work-to-Learn initiative is a further example of how to engage young people and adults in entering the workforce. Work-to-Learn is a work experience programme for young people who have struggled in mainstream education and who are at risk of becoming involved in the juvenile justice system. The programme employs a youth work approach to support marginalised young people in developing self-esteem, finding pathways to work and strengthening their engagement in mainstream education.

2019 DELIVERABLES

- (i) Develop a return to work service as part of the Public Employment Service to provide tailored advice and information to returnees including on skills requirements, training options, and available supports (i.e. Early Learning and Care, in-work welfare supports, disability supports etc.).
- (ii) Assist women returning to work in the Technology sector after a career break through Skillnet Ireland's Women ReBOOT programme offering group seminars to improve recruitment skills; technology training and industry insight; one on one coaching and in-company work placements.

⁸⁶ [Youth Employment Support Scheme](#)

- (iii) Increase the number of places on the Youth Employment Support Scheme (YESS), which acts as a pathway to targeting disadvantaged youths.
- (iv) Through the Work-to-Learn initiative help young people make the transition into the world of work.
- (v) Engage with adult dependents to promote access to Public Employment Services.
- (vi) Review findings of recent analyses of inactivity and identify policy issues to support the development of policy responses as part of Future Jobs Ireland 2020.

Ambition 4.5: Undertake promotional campaigns to encourage greater levels of participation in the labour force

Through *Future Jobs Ireland 2019*, a proactive approach to communication and engagement will be taken to help improve the awareness of the employment and training opportunities among inactive cohorts and also encourage employers to recruit from among these groups.

Opportunities exist to support increasing participation rates by targeting particular groups with promotions as part of the Jobs Week event and other Jobs Fairs. Jobs Week is a week of events to support jobseekers and employers throughout the country. It showcases the services and supports provided to employers, workers and other jobseekers through the Department of Employment Affairs and Social Protection's Intreo service.

Additionally, engagement with employers to promote recruitment and Corporate Social Responsibility (CSR) programmes for those groups with lower participation rates will be undertaken. Amongst the Department of Employment Affairs and Social Protection's objectives is the continued focus on CSR and increasing the signatories to the Employment and Youth Activation Charter (EYAC). The EYAC encourages employers to, in addition to recruiting job-ready people from the live register, provide employment skills training to unemployed people to help them become job ready such as hosting job-readiness events and CV and interview workshops, speaking at job clubs and familiarising themselves with employer supports for employing people with disabilities.

2019 DELIVERABLES

- (i) Undertake an engagement campaign with employers to promote recruitment and Corporate Social Responsibility (CSR) programmes for those groups with lower participation rates.
- (ii) Undertake a communications campaign to promote awareness of the Public Employment Service as a real recruitment option, especially for those groups with lower participation rates.
- (iii) As part of Jobs Week 2019 and Jobs Fairs, develop promotions for female participation, participation by older people and people with disabilities.



Transitioning to a Low Carbon Economy

Pillar 5. Transitioning to a Low Carbon Economy

The societal transformation required to meet the climate change challenge and transition to the low carbon economy necessitates the emergence of a new economic model focused on low carbon growth, resource efficiency and sustainable economic development. The Government's ambition under this pillar will sit alongside the new *All of Government Climate Action Plan* to make Ireland a leader in responding to climate change.

This imperative is driving remarkable growth in the green economy. For example, global revenues for companies involved in the renewable energy markets are projected to more than double from US\$ 116 billion in 2008 to more than US\$ 300 billion annually by 2020.

The transition to a low carbon economy requires the transformation of economies, workplaces, enterprises and labour markets. It encompasses a focus on sustainability, energy efficiency, and renewable energy combined with a major reduction in reliance on fossil-based resources. This includes the bioeconomy which aims to maximise the use of our renewable biological resources to create economic activity, employment and a sustainable society. Ireland is particularly well placed to develop a strong bioeconomy. The bioeconomy cuts across a range of sectors where Ireland has distinct natural advantages and a well-established enterprise base, including agriculture, marine, biopharma and forestry. Having the right skillsets and infrastructures are necessary to realise this opportunity; including the capacity to combine traditional industries such as agri-food with new emerging areas such as data analytics to create high value jobs, as well as ensuring we have the right R&D supports in place. There are also opportunities to leverage European funding as well as private capital to develop promising new value chains to further the bioeconomy for Ireland.

Alongside the emergence of the green tech sector and the bioeconomy, considerations around the environment, regulation and energy costs are driving all enterprises to look at new ways of doing business that are more energy efficient and environmentally friendly.

The sustainability agenda is also transforming how well-established sectors do business as we see the growth in green buildings, and low emissions vehicles. Consumer demands for environmentally friendly products and materials are also creating opportunities.

Skills gaps and shortages are already recognised across the construction, building renovation, environmental services and renewables sectors with the consequence of having a negative impact on those sectors that most rely on these. The use of clean technology also requires inter-disciplinary skills in engineering, science and business. By creating links between emerging industries and education, we can ensure Ireland has the technical knowledge and the skills necessary to excel in the changing marketplace.

In addition to a continued focus on skills, we need to ensure that the right environment is in place; in terms of infrastructures, access to finance, and a balanced regulatory framework

that enables development that supports, and is not constrained by, environmental considerations.

Targets

<i>KPI</i>	<i>Latest Scores</i>	<i>Baseline Date</i>	<i>2025 Target</i>	<i>Source</i>
<i>Share of total energy use from renewable sources</i>	10.6%	2017	20%	SEAI
<i>Number of residential retrofits</i>	21,430	2018	250,000	SEAI

Ambitious targets, including for CO₂ reductions, will also be set in the All of Government Climate Plan, which will seek to make Ireland a leader in responding to climate disruption.

CASE STUDY – CENTS - COOPERATIVE ENERGY TRADING SYSTEM

This seven-partner collaboration which makes up CENTS (Cooperative Energy Trading System) is proposing a disruptive technology platform for the electricity sector where consumers and communities will be empowered with the necessary infrastructure to generate their own electricity, earn from the excess electricity generation, and to be an integral part of decarbonizing their homes and communities for sustainable living.

With CENTS a software solution for a blockchain enabled cooperative peer-to-peer energy trading platform will be provided and necessary hardware requirements and market/regulatory strategies will be proposed.

The partners in this DTIF funded project, which crosses Energy, Climate Action & Sustainability and ICT sectors, are International Energy Research Centre, MPower, MSemicon, Templederry Renewable Energy Supply, UCC, NUIG and DIT.

Ambition 5.1: Become a leader in adopting and developing standards in the low carbon economy

Standards applications are much broader than the technologies underpinning digital transformation noted previously (see Ambition 1.1). They also encompass the circular economy, climate action, sustainability and the built environment. Through the development and adoption of high quality environmental standards, Ireland can improve the ecological footprint of enterprise, generate new markets for enterprise and attract more investment.

An initiative to help us deliver on our ambition here is the Excellence in Energy Efficient Design (EXEED)⁸⁷ programme that will be further expanded in 2019. It aims to influence and deliver new best practices in energy efficient design management. EXEED enables organisations to develop and apply a systematic approach to design, construction, and commissioning procedures for new investments and upgrades to existing assets. Ultimately, for enterprise this provides quality assurance, energy efficiency and long-term savings.

An Environmental Product Declaration (EPD) is a standardised way of measuring the environmental impact of a product or system. Declarations usually include information on the environmental impact of energy use and efficiency, raw material acquisition, the content of materials and chemical substances, emissions and waste generation.

2019 DELIVERABLES

- (i) Publish an environmental sustainability roadmap for the agri-food sector to ensure that the future development of agriculture and the land-use sector, including forestry, will be built upon and contribute fairly to Ireland's climate targets.
- (ii) Promote existing certification, standards and labels and identify the opportunities for developing new ones, for example bio-based products, etc.
- (iii) Drive innovation and efficiency in companies by promoting wider take-up of EXEED delivering efficiencies in at least 80 companies.

Ambition 5.2: Realise the opportunities for economic activity and job creation

These deliverables are designed to help Ireland exploit the opportunities presented by the transition to a low carbon economy by ensuring we have the right skills and the right regulatory, funding and policy environment in place.

The Climate Action Fund is one of the funds established under *the National Development Plan 2018-2027*. The fund will support initiatives that contribute to the achievement of Ireland's climate and energy targets in a cost-effective manner. The Department of Communications, Climate Action and Environment has responsibility for implementing the fund, which will have an allocation of at least €500 million over the period to 2027.

In order to understand the impact the transition to a low carbon economy may have, the *National Mitigation Plan*⁸⁸ contains a commitment to prepare a report on the economic and employment implications of the transition. The terms of reference for this work will consider a range of factors such as employment impacts, social and regional dimension, need for stakeholder dialogue and skills and training aspects.

⁸⁷ [Excellence in Energy Efficient Design](#)

⁸⁸ [Department of Communications, Climate Action & Environment \(2017\), National Mitigation Plan](#)

The Maritime Area and Foreshore (Amendment) Bill aims to align the foreshore consent system with the planning system and to provide a coherent mechanism to facilitate and manage development activity in the State's exclusive economic zone (EEZ) beyond the territorial waters/foreshore and on the continental shelf, including strategic infrastructure projects, such as oil and gas, ports and offshore renewable energy. This Bill will enable us to better manage our maritime environment in a sustainable manner and deliver economic and environmental benefits.

The transition to a low carbon economy presents a significant transformational challenge for enterprise. Various policy instruments such as lean carbon initiatives that build on existing lean programmes offered by EI and IDA, Environmental Product Declarations, audit tools and identifying pioneers or leaders to promote innovation and adaption to influence others in their supply chain could assist enterprise in achieving this. The Department of Communications, Climate Action and the Environment, the Department of Business, Enterprise and Innovation and the Enterprise Agencies are exploring these tools in the context of the preparation of the forthcoming *All of Government Climate Plan* and future iterations of *Future Jobs Ireland*.

2019 DELIVERABLES

- (i) Approve the successful projects from the first call under the Climate Action Fund and issue a further call for Expressions of Interest in 2019.
- (ii) Finalise the report on the regional dimension of the economic and employment implications of the transition to a low carbon economy.
- (iii) Position Ireland as a centre, in research, development and innovation, for smart grids, buildings and renewable technologies by:
 - a. Developing and opening a new smart grid portal
 - b. Review and update Ireland's Smart Grid Roadmap to 2050
 - c. Commencing the rollout of Smart Grid Meters by ESB.
- (iv) Deliver a national deep retrofit programme for existing housing stock.
- (v) Further develop and implement green public procurement (GPP) as part of National Public Procurement Policy Framework which includes;
 - a. Progress the incorporation of environmental considerations into public procurement through the Social Considerations Advisory Group; and
 - b. Develop a green procurement policy.
- (vi) Publish and progress the Maritime Area and Foreshore (Amendment) Bill to provide a streamlined development consent regime for Ireland's maritime area including offshore renewable energy developments.
- (vii) Expand the public charging infrastructure for electric vehicles by 200 on-street charging points and grow the total number of electric vehicles on the road in Ireland to over 10,000.
- (viii) Establish a national Business and Biodiversity Platform.

Ambition 5.3: Leverage Ireland’s natural resources, enterprise strengths and innovative capacity to be a global leader in the circular and bioeconomy

These deliverables are aimed at maximising the potential of the circular and bioeconomy to promote rural economic development and growth and to drive sustainable economic development as we transition to a low carbon economy.

The bioeconomy relates to the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, and bio-energy. It cuts across a range of sectors, including agriculture, the marine, forestry, water and waste management, energy, as well as biopharmaceuticals.

The potential benefits for Ireland from the bioeconomy – to contribute to climate change mitigation, promote rural employment and drive economic development – are well recognised. Ireland also has significant strengths and comparative advantages in the bioeconomy including several well-established and early stage companies that are promising pioneers in the bioeconomy as well as a growing research capacity. However, there is scope to promote further development to realise the full potential of the bioeconomy for Ireland.

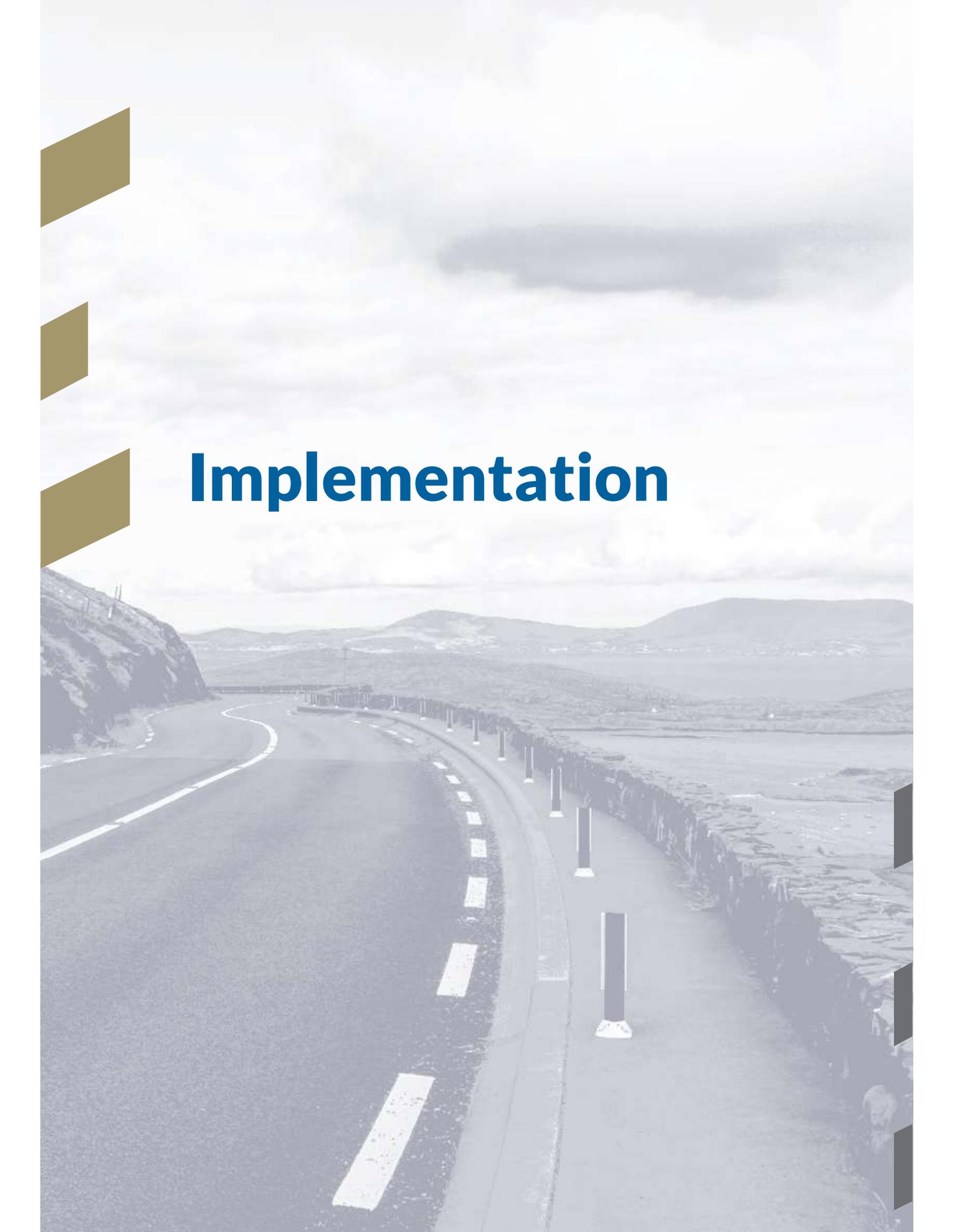
To reap the benefits of the bioeconomy, the delivery of the *National Policy Statement on the Bioeconomy*⁸⁹ will be progressed. The Statement sets out a vision, common principles, strategic objectives, and a framework for implementation to deliver on this vision for the bioeconomy in Ireland. It outlines the actions needed to expand the bioeconomy, including: promoting greater coherence between the many sectors of the bioeconomy; strengthening the development of promising bio-based products and growing the relevant markets for them; and accessing funding available at EU level as well as leveraging private investment.

2019 DELIVERABLES

- (i) Develop the bioeconomy by:
 - a. Identifying and addressing the key regulatory barriers to development of the bioeconomy, including the definition of waste, and commence delivery of measures to address these.
 - b. Undertaking awareness campaign to encourage take-up of bioeconomy funding opportunities, including European, private funding and the Project Ireland 2040 Funds.
- (ii) Develop Ireland’s national bioeconomy infrastructure to promote the bioeconomy including the Marine Innovation Park at Páirc na Mara and the National Bioeconomy Campus at Lisheen.

⁸⁹ Department of An Taoiseach - National Policy Statement on the Bioeconomy

- (iii) Scope the development of a Bioeconomy Innovation Platform to provide specialised Bioeconomy business support services.
- (iv) Publish a feasibility study on the establishment of National Marine Biomaterials Repository and, following this, scope out the funding for it.



Implementation

Implementation

Future Jobs Ireland is a Government priority and will be overseen by a Cabinet committee (Cabinet Committee A) which will have a standing agenda item regarding *Future Jobs Ireland*. This committee will be supported by a grouping of senior officials across Government Departments (Senior Officials Group A).

Progress on deliverables will be reported quarterly to the Senior Official Group through the Department of the Taoiseach, assisted by the Department of Business, Enterprise and Innovation using a simple mechanism (a 'traffic light' system) to ensure an ongoing whole-of-government focus on delivery. Biannually, more detailed progress reports will be made to Government and subsequently published. One of these reports will be an annual report detailing the progress made based on targets and metrics.

The National Competitiveness Council, given its role as National Productivity Board of Ireland will be given the opportunity to review and comment on the progress of productivity-related deliverables. The Labour Employer Economic Forum will be given the same opportunity.

Each deliverable will have an agreed delivery date of Quarter 1, 2, 3 or 4. Many deliverables involve collaboration between departments, so a lead department is assigned ownership for reporting and coordinating contributors. Partnering contributors are identified along with the leading Department.

Future Jobs Ireland is a medium-term agenda which will be achieved over a number of years. Over the course of 2019, the Department of the Taoiseach and the Department of Business, Enterprise and Innovation, in consultation with relevant stakeholders, will lead the development of new and additional ambitions and deliverables for inclusion in the next stage, *Future Jobs Ireland 2020*. These will include deliverables currently in development as well as additional ones to be developed by the year end.

The background of the page is a blurred photograph of a crowd of people, with a child's hand in the foreground holding a large green leaf. The overall color palette is light and airy, with a blueish tint. On the left side, there are three gold-colored diagonal bars. On the right side, there are three black diagonal bars.

Appendices

Appendices

Appendix A. Table of Ambitions and 2019 Deliverables

PILLAR 1. EMBRACING INNOVATION AND TECHNOLOGICAL CHANGE

Ambition 1.1: Position Ireland as a leading pioneer in technology adoption by investing in demonstrator sites and developing enabling frameworks and standards

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Develop new and existing demonstrator sites and test beds to trial new technologies and business solutions including: <ul style="list-style-type: none"> a. Expanding supports for advanced manufacturing including through extending the EI/IDA IMR Technology Centre to accommodate Cobotics and AR/VR and the planned establishment of an Advanced Manufacturing Centre. A new governance arrangement will be put in place to ensure coherence of all key supports for advanced manufacturing. b. Further expand the Tyndall National Institute to provide greater engagement with industry in areas such as micro/nano-electronics, photonics, Internet of Things, energy systems, and advanced materials. 	Q4 2019	Expanded range of services to enterprise sector New governance arrangements designed	DBEI	EI, IDA, SFI EI, IDA, SFI, UCC/Tyndall National Institute

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(ii)	Develop a National Centre of Excellence on High Performance and Nearly Zero Energy Buildings (NZEBC): a. Establish a National Steering Group b. Deliver NZEB Fundamentals training to over 500 people c. Government to consider the future development of the Centre.	Q2 2019 Q4 2019 Q3 2019	National steering Group in place Training to over 500 people complete Business case submitted for Government consideration	DCCA ⁹⁰	DHPLG, DBEI, DES, DFAT, Wexford Co Council, SOLAS, WWETB
(iii)	Undertake communications campaign promoting enterprise technology capabilities to international buyers, influencers and decision makers.	Q4 2019	Deliver EI Irish Advantage campaign on 'Vehicle of the Future' and 'Deep Tech'	DBEI	EI, ÚnaG
(iv)	Develop plans for a National Design Centre to support the potential of the design sector to drive innovation and competitiveness.	Q2 2019	Business plan developed	DBEI	National Design Forum, EI
(v)	Drive the development of the Connected and Autonomous Mobility sector in Ireland including through delivery of guidelines for testing, a strategic roadmap for Ireland and an administrative review of the current road traffic legislation.	Q2 2019	Draft guidelines for testing for consultation	DTTAS	D/Taoiseach & others

⁹⁰ DCCA are leading on this for reporting purposes. A lead Department for the project is still to be decided.

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(vi)	Position Ireland as a leader for developing standards including by hosting international meetings of influential decision makers in standardisation on key areas of digitisation such as Industry 4.0, blockchain, data security, etc. and utilising such events to benefit local stakeholder communities.	Q2 2019 Q4 2019 Q4 2019	Administrative review of the current road traffic legislation Draft strategic roadmap Meetings with influential decision makers in standardisation conducted	DBEI	NSAI

Ambition 1.2: Implement a strategic approach to maximise the benefits from digitalisation

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Publish and implement an Industry 4.0 strategy which will provide an ecosystem and supports for the digital transformation of the manufacturing sector and its supply chain.	Q1 2019	Publication of Industry 4.0	DBEI	IDA

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(ii)	Finalise and publish the National Digital Strategy to set out Ireland's vision and ambition to maximise the economic and societal benefits of digitalisation, with the Public Service leading in technology adoption.	Q2 2019	Publication of the new National Digital Strategy following Government approval	D/Taoiseach	DCCA, DBEI and OGCI
		Q3 2019	Establishment of implementation structure following publication		
(iii)	Deliver a National Artificial Intelligence Strategy to align with related EU initiatives and provide a direction for the research and development of AI by enterprises as well as the innovative use of AI by enterprises to improve productivity.	Q3 2019	National Strategy on AI developed	DBEI	

Ambition 1.3: Position the Public Service to be a leader in technology adoption and innovation

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Convene a major GovTech Summit to explore the opportunities that GovTech could bring to the Irish Economy and set out an Action Plan for moving forward.	Q2 2019 Q3 2019 Q4 2019	Summit held Paper completed Action Plan prepared	DPER	OGCI, D/Taoiseach, DBEI, DCCA

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(ii)	Departments to submit priority digital plans covering individual and business services via the Digital Leaders Group, including the expansion of access to public services through MyGovID.	Q2 2019	Submission of a coherent digital plan covering all Government Departments to the Civil Service Management Board	DPER	All Depts.
(iii)	Continued migration of Government Department's web content into one coherent and easy to use website, gov.ie, providing a one stop shop for accessing information on Government and its services.	Q4 2019	10 Government Departments migrated onto the gov.ie platform	DPER	OGCIO, all Depts.
(iv)	Implement priority actions under the Public Service Data Strategy - to include the commencement of the Data Sharing and Governance Bill, the development of a Digital Post Box service, the cataloguing of key data assets across the Public Service, the creation of a Data Governance Board, and the continued implementation of the Open Data Strategy.	Q4 2019	Digital Post Box service live and available for adoption by Public Bodies Data Governance Board up and running Data Catalogue created and accepting updates from PSBs	DPER	OGCIO, all Depts.
(v)	Secure approval and progress procurement for the Electronic Health Record programme.	Q2 2019	Approval secured	D/Health	
		Q3 2019	Tender issued		
		Q4 2019	Competitive dialogue commenced		
(vi)	Drive collaboration between the health service and the enterprise sector through the HfHI:				

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No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
a.	Match winning companies from HIHI's recent call with relevant clinical teams and oversee a study of each product in an Irish clinical setting.	Q4 2019	Companies matched with clinical teams Studies commenced	DBEI ⁹¹	EI, HIHI, D/Health
b.	Launch a Diploma in Healthcare Innovation and continue the provision of Innovation Workshops.	Q4 2019	Innovation Workshops rolled out Diploma in Healthcare Innovation launched	DBEI ⁹²	HIHI, EI, D/Health, HSE, TCD
c.	Complete mid-programme review of the economic, health and cultural impact of HIHI.	Q4 2019	Review completed	DBEI ⁹³	HIHI, EI, D/Health, HSE

⁹¹ As Secretariat to the HIHI National Oversight Group, DBEI will be the lead Department for reporting purposes, however, HIHI is a joint initiative between DBEI and D/Health, supported and delivered by EI, HSE and academic partners.

⁹² Ibid.

⁹³ Ibid.

Ambition 1.4: Establish Top Teams to realise opportunities presented by technological changes and the move to a low carbon economy

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Pilot Top Teams in the following areas: a. Artificial Intelligence b. GovTech c. Offshore renewables	Q4 2019 Q4 2019 Q3 2019	Top Team established Top Team established Recommendations reviewed Priority actions identified Top Team established	DBEI DPER DCCAE	Relevant Depts & Agencies OGCIO, DBEI, EI, industry, academia DPHLG, DBEI, D/Taoiseach, agencies Other Depts
(ii)	Identify further areas of opportunity that would benefit from the creation of a Top Team.	Q3 2019	Areas of opportunity identified	DBEI	Other Depts

Ambition 1.5: Increase the capacity of SMEs to engage in RD&I

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Implement the projects awarded funding under the first call of the Disruptive Technologies Innovation Fund and issue a further call in 2019 drawing on the learnings from 2018.	Q4 2019	First tranche of DTIF projects underway; Second tranche of projects announced	DBEI	EI
(ii)	Commence a programme of challenge-based research and innovation initiatives through Science Foundation Ireland (SFI) starting with a new SFI Future Innovator Prize to encourage the development of novel, potentially disruptive, technologies to address significant societal challenges.	Q4 2019	Winning team from first tranche of projects announced	DBEI	SFI
(iii)	Directly assist SMEs through the temporary injection of expertise through RD&I placement programmes including through EI's graduate programmes and SFI Industry Fellowships.	Q4 2019	Awards made	DBEI	EI, SFI, ÚnaG

Ambition 1.6: Incentivise SMEs to invest in new technologies

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Consider (with input from industry) how the existing R&D tax credit meets the needs of SMEs and how it could be tailored to address their needs such as considering: <ul style="list-style-type: none"> a. allowing for more extensive use of outsourcing by SMEs by amending the amount of outsourced expenditure which qualifies 	Q4 2019 (as part of Budget 2020)	Report to issue following public consultation with stakeholders and analysis of economic implications of R&D relief	DFIN	

	<p>for the R&D tax credit, particularly with regards to encouraging collaboration with Higher Education Institutions;</p> <p>b. amending the system of repayable tax credits for SMEs specifically to ensure that they receive the benefit in a timely and relevant period;</p> <p>c. whether a separate R&D tax credit scheme is required for SMEs such as those available in other countries, for example to allow for a cash refund in full in the year of the claim and a higher level of credit to SMEs (who meet a predetermined definition); and</p> <p>d. the eligibility of design expenditure under the RD&I tax credit relief.</p>					
(ii)	In the context of Budget 2020, evaluate proposals considering the feasibility of introducing a financial incentive, such as cash refunds (in one instalment) or non-tax-based incentive(s), to stimulate investment in SMEs' digital back office systems.	Q4 2019	Evaluation of DBEI proposals	DFIN	DBEI	
(iii)	In the context of Budget 2020, evaluate proposals around the introduction of a range of targeted accelerated capital allowances for investments in transformative technologies and in alignment with the Industry 4.0 Strategy.	Q4 2019	Evaluation of DBEI proposals	DFIN	DBEI, Tax Strategy Group	
(iv)	Commence a review of the EI R&D grant support scheme to assess its appropriateness, effectiveness and efficiency in delivery on its objectives.	Q4 2019	Review commenced	DBEI	EI, ÚnaG	

Ambition 1.7: Develop Transition Teams to assist workers and sectors likely to be most challenged by our changing economy

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	<p>Commission the National Economic and Social Council (NESC) to develop policy recommendations for consideration by Government for the operation of Transition Teams to manage the impact of economic transition on vulnerable workers and sectors which might include:</p> <ul style="list-style-type: none"> a) developmental supports for enterprises and sectors faced with challenges arising from the move to a low carbon economy, sustainable business models and new technologies; b) career advice and training guidance to managers and workers in sectors and job roles affected by future changes; c) accessible training to upskill and retrain such workers including through Skills to Advance as well as tailored development plans for them; and d) potential EU financial assistance opportunities for such a programme. 	Q2 2019	Research initiated	D/Taoiseach	<p>NESC, DES, DEASP, DBEI, DAFM, ETBs, SOLAS, EGFSN, agencies, industry representative groups, trade unions</p>

PILLAR 2. IMPROVING SME PRODUCTIVITY

Ambition 2.1: Diversify our enterprise base to ensure the Irish economy is more resilient and adaptable

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Strengthen the capacity of Local Enterprise Offices (LEOs), in collaboration with Enterprise Ireland, to provide a comprehensive suite of supports for indigenous Irish businesses and entrepreneurs that will enable seamless and appropriate supports (including addressing any gaps in such supports) for ambitious and growth-oriented firms thereby achieving a step-change in enterprise productivity, innovation and resilience.	Q2 2019	Assessment of gaps in provision completed	DBEI	LEOs, EI, ÚnaG
(ii)	Prepare for ISIF and EI to increase the availability of patient long term equity investment to support indigenous Irish companies in scaling their businesses.	Q4 2019	200 Lean4Micro Participants Plan developed	DBEI	DFIN, DAFM, EI, ISIF and SBCI
(iii)	Open new Embassies and Consulates as well as expanding the overseas presence of our Enterprise Agencies to grow new export and investment markets.	Q4 2019	Overseas footprint expanded	DFAT	DBEI, EI, IDA, DAFM, Bord Bia
(iv)	Increase take-up of supports among SMEs to improve competitiveness and enhance innovation, through targeted awareness raising campaigns for enterprises, including EI Global Ambition ⁹⁴ campaign	Q4 2019	Development of enhanced EI CRM system with digital marketing automation platform	DBEI	EI, IDA, ITI, SFI, ÚnaG, Skillnet Ireland, NSAI, Bord Bia

⁹⁴ [Enterprise Ireland - Global Ambition](#)

	and support exporter diversification through the EI Irish Advantages ⁹⁵ campaign.		for Overseas offices to support buyer engagement and reach	and other stakeholders
(v)	Initiate delivery of a new six-year strategy for female entrepreneurship aimed at: <ul style="list-style-type: none"> a. increasing the number of females that choose to start a business, b. increasing the number of female founded high potential start-ups, c. increasing exports and jobs growth in female led companies, by 2025. 	Q4 2019	Strategy commenced targeting 22 female-founded HPSUs by 2025	EI, LEOs, UnaG and other stakeholders
(vi)	Identify opportunities in the wider creative industries sector and develop roadmap for the support and enhancement of these industries.	Q3 2019	Stakeholder consultation completed	Creative Ireland
		Q3 2019	Opportunities identified and delivery partners agreed	
		Q4 2019	Roadmap agreed and published	
(vii)	Publish and commence implementation of a National Policy on Social Enterprise which will support the development of social enterprise as part of the wider entrepreneurship ecosystem.	Q2 2019	National Policy published and implementation commenced	Relevant public bodies and agencies, as appropriate

⁹⁵ [Enterprise Ireland - Irish Advantage](#)

Ambition 2.2: Promote enterprise productivity as a driver of economic prosperity

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Develop our understanding of the drivers of productivity at aggregate and sectoral level.	Q4 2019	Data produced for firm-, sectoral- and aggregate levels ⁹⁶	DBEI	CSO, DFIN and others
(ii)	Develop a plan to support the performance of Irish SMEs, start-ups and firms in emerging sectors building on the recommendations in the OECD Review of SME and Entrepreneurship Policies in Ireland.	Q4 2019	A SMEE Strategy Conference will take place in June 2019. The subsequent output will formulate the vision for an SME Strategy for Ireland	DBEI	EI, DFIN, IDA, ITI, ÚnaG, SFI, Skillnet Ireland, NSAI, Bord Bia and other stakeholders
(iii)	The Government will formally respond annually to priority National Competitiveness Council's recommendations to enhance Ireland's productivity and competitiveness performance.	Q4 2019	Formal response provided	D/Taoiseach	NCC, D/BEI, other relevant Depts.
(iv)	Increase take-up of supports among micro-enterprises and SMEs through LEOs' Making it Happen ⁹⁷ campaign promoting competitiveness, productivity and innovation supports.	Q4 2019	9,000 Mentoring Participants 200 Lean4Micro Participants 300 Business Expansion Project Grants Approved	DBEI	EI, LEOs, ÚnaG

⁹⁶ Subject to data availability and model functioning

⁹⁷ [Local Enterprise Office - Making it Happen](#)

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
			100 LEO Innovation Investment Fund		

Ambition 2.3: Enhance business framework conditions for firm creation and growth

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Remove any disproportionate burden on SMEs by applying the SME Test across Government Departments to any relevant new legislation or regulation(s).	Q4 2019	Raise awareness and promote the SME Test throughout Government Departments. Workshops will be available for policymakers	DBEI	DPER, D/Taoiseach
(ii)	Publish the interim report on the Review of the Administration of Civil Justice.	Q4 2019	Interim report published	DJE	
(iii)	Commence the new business models for legal services, including new legal partnerships and limited liability partnerships.	Q3 2019	New business models commenced	DJE	LSRA
(iv)	Amend the planning legislation to introduce reforms to the judicial review provisions relating to planning cases and streamline the planning procedures for Implement the recommendations in relation to the Judicial Review of Strategic Infrastructure Projects Developments.	Q4 2019	Legislation amended	DHPLG	DJE

(v)	Progress the primary legislation required to provide an appropriate cyber vetting regime for the Cyber Security sector.	Q4 2019	Examination of the law in relation to the establishment and operation of a scheme for issuing certificates in criminal history complete Outline proposal prepared	DJE	DCCAE, DBEI and agencies
(vi)	Complete the implementation of the Cost of Insurance Working Group's (CIWG) recommendations on the Cost of Motor Insurance and the Cost of Employer and Public Liability Insurance and ensure that relevant stakeholders implement the recommendations set out in the Personal Injuries Commission's (PIC) two reports.	Q4 2019	CIWG Update Reports to outline progress on implementation of CIWG and PIC Recommendations, and published on DFIN website	DFIN	DBEI, DJE, DTTAS, CBI
(vii)	Enactment of the Local Government Rates Bill 2018 to modernise the legislation governing commercial rates and to introduce targeted rates alleviation schemes.	Q4 2019	Local Government Rates Bill enacted	DHPLG	

Ambition 2.4: Encourage enterprises to exploit established technology and business process improvements to increase productivity

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Launch the Future Growth Loan Scheme to provide long term debt financing for strategic investments.	Q2 2019	Scheme open for applications	DBEI	DFIN, DAFM, EI, ISIF, SBCI, ÚnaG

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(ii)	Support digital skills development within micro and SME management teams through existing e-marketing supports and assess the need for a potential Digital Skills Voucher Scheme.	Q3 2019 Q4 2019	Call 2 of Online Retail Scheme Assessment completed	DBEI	EI, LEOs, ÚnaG
(iii)	Introduce the new EI Operational Excellence programme ⁹⁸ to enterprises targeting whole of company transformation including capital investment, implementation of new business innovation practices, and training.	Q4 2019	10 projects approved >€250k	DBEI	EI, ÚnaG
(iv)	Conduct and publish an analysis of productivity in the construction sector to inform new industry approaches for improvement.	Q3 2019	Productivity analysis published	DPER	DBEI
(v)	Develop an implementation plan for actions to stimulate construction sector productivity, including greater deployment of Building Information Modelling (BIM).	Q4 2019	Implementation plan published	DPER	Construction Sector Working Group, DES, DBEI, EI
(vi)	Commence a study on the retail sector to understand the full extent and impact of disruption to pre-existing business models in light of digital transformation.	Q4 2019	Study commenced	DBEI	Retail Consultation Forum
(vii)	Review the conclusions of the Freight Transport Association Ireland (FTAI) 'Project on the Cost of Distribution' to assist operators to focus on profitability and productivity, identifying and implementing actions arising for Government, where appropriate.	Q3 2019	Actions identified, if appropriate, from the conclusions of the FTAI report	DTTAS	FTAI

⁹⁸ [Enterprise Ireland - Operational Excellence programme](#)

Ambition 2.5: Improve leadership and management skills in SMEs

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Assess the comparative performance of managers in Irish SMEs against international best practice and identify gaps that need to be addressed.	Q4 2019	EGFSN Report published	DBEI	EGFSN, IDA EI, LEOs, ÚnaG
(ii)	Deliver key business development programmes to senior and middle managers across the tourism sector.	Q4 2019	Business development programmes delivered to up to 1,000 senior and middle managers	DTTAS	Fáilte Ireland
(iii)	Expand Skillnet Ireland provision in leadership skills and management development skills in SMEs to support productivity growth and to support the absorption of new technologies by SMEs.	Q4 2019	500 places provided to small business owner / managers on the Skillnet Ireland SME Management Development Programme	DES	NTF Advisory Group, National Skills Council, Skillnet Ireland
(iv)	Deliver targeted awareness campaigns for enterprises promoting management development and mentoring programmes.	Q4 2019	3,000 Management Development Participants 9,000 Mentoring Participants	DBEI	EI, LEOs, ÚnaG
(v)	Include management and leadership skills as a particular focus in the call for proposals under Springboard+ 2019.	Q1 2019	Course proposals in management & leadership skills included in Call for Springboard+ 2019	DES	Employers

Ambition 2.6: Strengthen linkages between SMEs and multinational enterprises and our tertiary education institutions

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Commence an evaluation of the Global Sourcing Initiative in order to identify ways to increase its reach (including to LEO clients) and impact.	Q4 2019	Evaluation commenced	DBEI	IDA, EI, LEOs, UnaG
(ii)	Develop a Regional Innovation and Technology Clustering Programme to link SMEs and Institutes of Technology.	Q2 2019	Pilot Initiative developed	DBEI	Agencies, industry, DES, other relevant Depts. and bodies
(iii)	Develop new and existing clusters or innovation districts to support best practice sharing and knowledge development such as: <ul style="list-style-type: none"> a. the Innovation District Advisory Group will develop a vision and recommend a roadmap and governance structure for a globally competitive innovation district, centred around the Grand Canal Dock area, which would act as a magnet for talent, investment, innovation, industry and research; b. Cyber Ireland, a cybersecurity cluster in Cork, which aims to position Ireland as a leading location for cybersecurity expertise: and c. the Atlantic Economic Corridor initiative which seeks to maximise the enterprise assets along the western seaboard from Kerry to Donegal, and to combine the economic hubs, clusters and catchments of the area to attract investment, improve competitiveness and support job creation. 	Q2 2019	Roadmap for competitive innovation district published	D/Taoiseach	DBEI, DES, DFIN, IDA, EI
		Q2 2019 Q4 2019	Cluster established Further development of cluster	DBEI	CIT, IDA, EI, DCCAE, DFAT, industry
		Q4 2019	Further development of the Atlantic Economic Corridor	DRCD	Relevant Departments and Agencies, HEIs, Local

		Authorities, Industry
(iv)	Identify relevant Government funds/programmes where it would be appropriate to consider the inclusion of a requirement to strengthen or develop linkages between SMEs, MNEs and or Higher and Further Education and Training Institutions, in future competitive funding calls.	DBEI
	Q4 2019	D/Taoiseach
	List of funds/ programmes identified	

PILLAR 3. ENHANCING SKILLS AND DEVELOPING AND ATTRACTING TALENT

Ambition 3.1: Provide high quality and timely education and training responses to evolving enterprise and skills needs

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Initiate a competitive call for proposals in line with the new Human Capital Initiative that will involve investment of €300 million in higher education over the 5 year period from 2020 to 2024, with €60m being made available in each of those years.	Q2 2019	Successful proposals identified	DES	HEA
(ii)	Reform the National Training Fund (NTF) to align more directly with the changing skill requirements of the Irish labour force.	Q4 2019	New investment priorities reflected in Revised Estimates 2020	DES	
(iii)	Scope a new pilot programme for SMEs engaging in upskilling and training for the first time.	Q3 2019	Scoping document produced with programme objectives and conditions clearly identified	DES	input from agencies (e.g. EI, Teagasc, ÚnaG etc.) and enterprise
(iv)	Develop digital literacy in our young people by a. progressing the development of the new primary school mathematics curriculum to include computational, flexible and creative thinking skills; and b. exploring approaches to coding in an Irish context, to inform the redevelopment of the primary school curriculum.	Q4 2019	Development of new curriculum progressed	DES	NCCA
(v)	Expand Skillnet Ireland provision in high demand areas as evidenced by EGFSN Skills Forecasting such as AI/Cognitive systems, AR/VR, robotics, blockchain and cybersecurity.	Q4 2019	Report for Minister Delivery of programmes commenced	DES	Skillnet Ireland, DBEI, HEA

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(vi)	Introduce the SFI Centres for Research Training Programme for PhD and Masters students for the 2019/20 academic year.	Q4 2019	First intake of students in place in new centres	DBEI	SFI
(vii)	Strengthen the pipeline of talent in scientific research through the launch of a new SFI Frontiers for the Future programme to support excellent individual researchers.	Q4 2019	Awards made	DBEI	SFI
(viii)	Commence work on new awards made under the SFI / Engineering and Physical Sciences Research Council (UK) Centres for Doctoral Training partnership to train engineers and scientists with the skills, knowledge and confidence to tackle today's evolving issues and future challenges.	Q4 2019	First intake of students in place	DBEI	SFI
(ix)	Commence EI's Pilot Industry Graduate programme supporting Graduates in two Technology Centres to provide a new pool of industry ready people in SMEs to help address skills and absorptive capacity gaps.	Q4 2019	16 Graduates in two Technology Centres	DBEI	EI, ÚnaG
(x)	Develop responses to the critical regional skills needs identified by Irish enterprises through the Skills for Growth initiative and Spotlight on Skills programme.	Q4 2019	FET and HE courses modified or developed	DES	Regional Skills Fora and employers
(xi)	Develop a strategic cohesive approach to upskilling across the audio-visual sector including supporting companies in retaining and fully exploiting their intellectual property.	Q4 2019	Criteria developed with resourcing in place for upskilling in the sector	DCHG	Audio-visual Steering Group, Screen Ireland

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(xii)	Develop appropriate requirements and solutions to ensure that the new regional uplift in the film tax relief delivers a highly skilled audio-visual workforce in the regions.	Q4 2019	Criteria developed with resourcing in place for implementation of regional uplifts ⁹⁹	DCHG	DFIN, Audio-visual Steering Group,

Ambition 3.2: Encourage lifelong learning and upskilling

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Develop mechanisms for formal recognition of prior learning of employees' skills through the Recognised Prior Learning (RPL) system.	Q4 2019	RPL mechanisms developed	DES	QQI
(ii)	Conduct a study to identify any barriers in workplaces which inhibit employees from undertaking training.	Q4 2019	Desk-based study conducted	DBEI	IDA, EI, ÚnaG, SOLAS and Skillnet Ireland
(iii)	Implement 'Skills to Advance' which will support employees who have lower skills levels to remain or to advance in their careers.	Q4 2019	1,600 workers trained through the three routes identified in the policy framework	DES	Employers

⁹⁹ Dependent on Regulations and State Aid

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(iv)	Implement Upskilling Pathways – New Opportunities for Adults which aims to help low skilled adults acquire literacy, numeracy and digital skills.	Q4 2019	Grow and diversify opportunities for lower skilled adults to access education and training	DES	DEASP
(v)	Develop Springboard+ 2019 training in emerging new technologies, as identified by industry's needs, such as blockchain, AI and robotics.	Q2 2019	Courses in emerging new technologies approved for funding.	DES	Employers
(vi)	Use flexible provision where possible by providers of Springboard+ training to ensure that the courses suit the needs of those in employment.	Q3 2019	Roll out of Flexible Springboard+ courses	DES	Employers
(vii)	Implement the EXPLORE Programme to help address the issue of Ireland's low level of participation in lifelong learning, particularly targeting persons over 35 years of age in manufacturing employment through improving digital and transversal skills.	Q2 2019	Roll out of new EXPLORE programmes	DES	Employers

Ambition 3.3: Foster participation in apprenticeship and traineeship programmes

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	In partnership with industry, continue to expand apprenticeship and traineeship offerings to meet identified and emerging skill needs and to prepare people for new occupations.	Q4 2019	Growth of 800 in registrations on new apprenticeships, of 400 on craft apprenticeship and 1,100 on traineeships 10 new apprenticeships and 10 new traineeships to be developed	DES	Agencies (e.g. IDA, EI, Teagasc, ÚnaG, Screen Ireland etc.) and enterprise
(ii)	Deliver a communications campaign to promote apprenticeships amongst businesses and the public including refocusing the Generation Apprenticeship Campaign on employers.	Q4 2019	Increased visibility of apprenticeships	DES	DBEI
(iii)	Introduce a new online marketplace for apprenticeship opportunities.	Q3 2019	Online portal in place	DES	
(iv)	Implement actions in the <i>Review of Pathways to Participation in Apprenticeship</i> .	Q4 2019	Implementation of recommendations identified in the review	DES	

Ambition 3.4: Compete successfully for international talent

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Implement the recommendations of the 2018 Review of Economic Migration Policy to ensure that the employment permit regime remains fully supportive of the Ireland's labour market needs, be they skills or labour shortages in certain sectors.	Q4 2019	Action Plan developed with timelines & key stakeholders. Short-term recommendations implemented in 2019	DBEI	Economic Migration Interdepartmental Working Group, Enterprise Agencies, Employer representative bodies
(ii)	Ensure that all aspects of the process for granting permission to work for the spouses and partners of Critical Skills Employment Permit holders is as streamlined as possible.	Q2 2019	Streamlined process in place	DBEI	DJE
(iii)	Deliver the second call of Career-FIT which injects international researchers into Irish industry.	Q4 2019	29 researchers approved	DBEI	EI
(iv)	Report on the perceptions and attractiveness of Ireland as a place to live and work among students and young adults across the European Union post-Brexit.	Q4 2019	Report completed	DFAT	

Ambition 3.5: Improve career guidance and advice provision

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Enhance the career advice service provided through the Public Employment Service to include offering support to those currently in employment who may need to identify new opportunities as a result of technological and other changes.	Q4 2019	Promote and increase the level of support available to those seeking new opportunities and work with SOLAS and ETBs to address training challenges	DEASP	DES, ETBs and SOLAS
(ii)	Publish the <i>Review of Career Guidance</i> and develop a plan to implement its recommendations.	Q2 2019	Review published	DES	
(iii)	To help students career plan from a young age, develop further links between DEIS schools and the Intreo Service across the Public Employment Service.	Q4 2019	Pilots will be extended to all Divisions	DEASP	DES

PILLAR 4. INCREASING PARTICIPATION IN THE LABOUR FORCE

Ambition 4.1: Encourage participation in the labour force through high-quality Early Learning and Care

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Introduce the Affordable Childcare Scheme to publicly subsidise high quality Early Learning and Care.	Q4 2019	Affordable Childcare Scheme open for applications	DCYA	
(ii)	Develop a strategic capital investment plan to ensure that the demand for high-quality Early Learning and Care places is met.	Q4 2019	Necessary research to inform development of the plan underway	DCYA	
(iii)	Publish a <i>Childminding Action Plan</i> to give parents greater access to subsidised informal Early Learning and Care.	Q2 2019	Childminding Action Plan published	DCYA	
(iv)	Explore mechanism to control fees charged to parents as part of the development of a new funding model for Early Learning and Care.	Q4 2019	Paper on options prepared	DCYA	
(v)	Review the existing <i>Guidelines on the use of School Buildings outside of School Hours</i> in consultation with school management bodies for schools to facilitate the use of school buildings for after school care/clubs.	Q4 2019	Undertake a survey of a representative sample of schools which will be used to inform the review of the existing Guidelines	DES	Management Bodies
(vi)	Promote uptake of accelerated capital allowances to incentivise employers to provide Early Learning and Care facilities for the use of their employees, by providing an accelerated deduction for the capital investment costs incurred.	Q1 2019	Revenue Notes for Guidance available on the Revenue website	DFIN	DCYA

Ambition 4.2: Foster participation in the labour force through flexible working solutions

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Undertake research on the prevalence and types of remote working arrangements within the Irish workforce, and the attitudes towards such working arrangements, as well as the factors which inhibit employers and employees to partake in such arrangements.	Q4 2019	Input for policy development in this area	DBEI	DoT, DJE, DEASP
(ii)	Develop guidance to facilitate employers to offer more family-friendly working options, promoting the adoption of flexible and or remote working solutions and structures for parents.	Q3 2019	Business Advice provided	DJE	DBEI, DEASP, DCYA, Agencies
(iii)	Commence a national consultation on the extension of flexible working options to all employees.	Q4 2019	Consultation commenced	DJE	DBEI, DEASP
(iv)	Extend provision for unpaid Parental Leave and amend the upper age limit of the child for which the leave can be taken from 8 to 12 allowing for greater flexibility for parents.	Q2 2019	Implementation timeframe and milestones agreed	DJE	

Ambition 4.3: Improve incentives to participate in the labour force

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	<p>To improve employment outcomes for people with disabilities</p> <ol style="list-style-type: none"> a. publish the results of the consultation exercise around the recommendations on early engagement and Disability Allowance (DA) realignment from the <i>Make Work Pay</i> report; b. develop an implementation and communications plan around applying the early engagement approach; and c. consult with disability stakeholders about the implementation plan. 	Q4 2019	Early engagement implementation and communications plan finalised	DEASP	
(ii)	<p>Reduce disincentives for those who wish to work longer by considering options such as:</p> <ol style="list-style-type: none"> a. Deferral of State pension contributory on an annual basis to include actuarial increases in payment; b. Facilitating those without a full social insurance record to increase their retirement provision by choosing to continue making PRSI contributions beyond State pension age and up to the actual date of retirement; and c. Review barriers to older workers participating in the labour market. 	Q4 2019	Papers setting out options for progress will be prepared	DEASP	
(iii)	<p>Consider income tax arrangements for second earners that optimise financial incentive to work, taking account of the impact that the income tax system may have on female participation in the workforce.</p>	Q3 2019	Budget 2020	DFIN	

Ambition 4.4: Encourage adult dependents and beneficiaries of other full-time welfare payments to engage in activation, enter and/or stay in the workforce

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Develop a return to work service as part of the Public Employment Service to provide tailored advice and information to returnees including on skills requirements, training options, and available supports (i.e. Early Learning and Care, in-work welfare supports, disability supports etc.).	Q4 2019	DEASP will target potential returners to the workforce as part of its communications campaign to advise them of case officer services which are available to help them progress to employment	DEASP	
(ii)	Assist women returning to work in the Technology sector after a career break through Skillnet Ireland's Women ReBOOT programme offering group seminars to improve recruitment skills; technology training and industry insight; one on one coaching and in-company work placements.	Q4 2019	70 Participants	DES	Skillnet Ireland
(iii)	Increase the number of places on the Youth Employment Support Scheme (YESS), which acts as a pathway to targeting disadvantaged youths.	Q4 2019	DEASP will increase the number of participants to circa. 1100 by end 2019	DEASP	
(iv)	Through the Work-to-Learn initiative help young people make the transition into the world of work.			DJE	An Garda Síochána, industry
(v)	Engage with adult dependents to promote access to Public Employment Services.	Q4 2019	DEASP will strive to increase the number of Qualified Adults engaged with to 3,000 in 2019	DEASP	

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(vi)	Review findings of recent analyses of inactivity and identify policy issues to support the development of policy responses as part of <i>Future Jobs Ireland 2020</i> .	Q4 2019	Report prepared	D/Taoiseach	DPER, DEASP, DCYA and DBEI

Ambition 4.5: Undertake promotional campaigns to encourage greater levels of participation in the labour force

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Undertake an engagement campaign with employers to promote recruitment and Corporate Social Responsibility (CSR) programmes for those groups with lower participation rates.	Q4 2019	Agreements will be put in place with 100 employers through DEASP's Employer Relations Charter	DEASP	DBEI and their agencies, SOLAS, ETBs
(ii)	Undertake a communications campaign to promote awareness of the Public Employment Service as a real recruitment option, especially for those groups with lower participation rates.	Q4 2019	Incorporated in communication campaigns	DEASP	
(iii)	As part of Jobs Week 2019 and Jobs Fairs, develop promotions for female participation, participation by older people and people with disabilities.	Jobs Week - Q1 2019 Job Fairs - to end 2019	100 events involving over 500 employers and over 14,000 jobseekers will be provided during Jobs Week 2019	DEASP	

PILLAR 5. TRANSITIONING TO A LOW CARBON ECONOMY

Ambition 5.1: Become a leader in adopting and developing standards in the low carbon economy

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Publish an environmental sustainability roadmap for the agri-food sector to ensure that the future development of agriculture and the land-use sector, including forestry, will be built upon and contribute fairly to Ireland's climate targets.	Q1 2019	Develop roadmap building blocks: vision, mission, principles and targets	DAFM	Teagasc, Bord Bia
		Q1 2019	Establishment of workstreams to develop actions to deliver targets		Teagasc, Bord Bia
		Q2 2019	Public consultation on the roadmap		
		Q3 2019	Roadmap published		
		Q1 2019	Commence DAFM/EPA funded project to identify pathways to carbon neutrality		NUIG, Teagasc, GMIT
(ii)	Promote existing certification, standards and labels and identify the opportunities for developing new ones, for example bio-based products, etc.	Q3 2019	Working Group established	DAFM	DCCAE, DBEI and NSAI
(iii)	Drive innovation and efficiency in companies by promoting wider take-up of EXEED delivering efficiencies in at least 80 companies.	Q4 2019	80 companies delivering energy efficiencies	DCCAE	SEAI

Ambition 5.2: Realise the opportunities for economic activity and job creation

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Approve the successful projects from the first call under the <i>Climate Action Fund</i> and issue a further call for Expressions of Interest in 2019.	Q2 2019 Q3 2019	Successful projects approved Issue second call for expressions of interest	DCCAE	DTTAS, DHPLG, DAFM
(ii)	Finalise the report on the regional dimension of the economic and employment implications of the transition to a low carbon economy.	Q4 2019	Report complete	DCCAE	DBEI, relevant Government Departments, agencies & stakeholders
(iii)	Position Ireland as a centre, in research, development and innovation, for smart grids, buildings and renewable technologies by: a. Developing and opening a new smart grid portal; b. Review and update Ireland's Smart Grid Roadmap to 2050; and c. Commencing the rollout of Smart Grid Meters by ESB.	Q4 2019	Smart Grid Portal operational Smart Grid Roadmap review complete Rollout of smart meters	DCCAE	SEAI, ESB
(iv)	Deliver a national deep retrofit programme for existing housing stock.	Q4 2019	Deep retrofits complete in at least 200 homes	DCCAE	SEAI

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(v)	<p>Further develop and implement green public procurement (GPP) as part of National Public Procurement Policy Framework which includes;</p> <p>a. Progress the incorporation of environmental considerations into public procurement through the Social Considerations Advisory Group</p> <p>b. Produce a green procurement implementation policy.</p>	Q1 2019	First meeting of cross departmental Social Considerations Working Group	DCCAE	OGP, SEAI, EPA, Social Considerations Advisory Group
(vi)	<p>Publish and progress the Maritime Area and Foreshore (Amendment) Bill to provide a streamlined development consent regime for Ireland's maritime area including offshore renewable energy developments.</p>	Q3 2019	Maritime Area and Foreshore (Amendment) Bill published	DHPLG	
(vii)	<p>Expand the public charging infrastructure for electric vehicles (EVs) by 200 on-street charging points and grow the total number of electric vehicles on the road in Ireland to over 10,000.</p>	Q4 2019	200 on-street charging points in place Over 10,000 EV's on the road	DCCAE	SEAI
(viii)	<p>Establish a national Business and Biodiversity Platform.</p>	Q4 2019	Terms of Reference Agreed 3-year workplan developed	DCHG	DBEI

Ambition 5.3: Leverage Ireland’s natural resources, enterprise strengths and innovative capacity to be a global leader in the circular and bioeconomy

No.	Deliverable	Timeframe	2019 Output	Lead	Other key stakeholders
(i)	Develop the bioeconomy by: a. Identifying and addressing the key regulatory barriers to development of the bioeconomy, including the definition of waste, and commence delivery of measures to address these b. Undertaking awareness campaign to encourage take-up of bioeconomy funding opportunities, including European, private funding and the <i>Project Ireland 2040</i> Funds.	Q4 2019 Q3 2019	Key barriers identified & commence remedial measures Sources of funding identified & commence awareness campaign	DCCAE	DAFM, DBEI, BIG
(ii)	Develop Ireland’s national bioeconomy infrastructure to promote the bioeconomy including the Marine Innovation Park at Páirc na Mara and the National Bioeconomy Campus at Lisheen.	Q4 2019	Reporting actions identified in line with EI reporting requirements and coordination with BEACON Research Centre and Bioeconomy Implementation Group achieved	DAFM	DCCAE, DBEI, BIG
(iii)	Scope the development of a Bioeconomy Innovation Platform to provide specialised Bioeconomy business support services.	Q4 2019	Scoping report presented to the Bioeconomy Implementation Group	DAFM	DCCAE, DBEI
(iv)	Publish a feasibility study on the establishment of National Marine Biomaterials Repository and, following this, scope out the funding for it.	Q4 2019	Study published	DAFM	DCCAE, BIG, Marine Institute

Appendix B. Metrics

PILLAR 1. EMBRACING INNOVATING FOR THE NEW ECONOMY

<i>KPI</i>	<i>Latest Scores</i>	<i>Baseline Date</i>	<i>2025 Target</i>	<i>Source</i>
<i>GERD as a % of GNP</i>	1.4%	2016	2.5% ¹⁰⁰	R&D Budget
<i>SMEs introducing product or process innovations (as % of all SMEs)</i>	46%	2017	55%	EIS ¹⁰¹
<i>SMEs with marketing or organisational innovations (as % of all SMEs)</i>	53%	2017	60%	EIS

PILLAR 2. IMPROVING PRODUCTIVITY PARTICULARLY IN SMES

<i>KPI</i>	<i>Latest Scores</i>	<i>Baseline Date</i>	<i>2025 Target</i>	<i>Source</i>
<i>Multifactor productivity growth in domestic sectors</i>		2016	1% increase on average per annum	CSO

¹⁰⁰ This is the EU 2020 Target for Ireland. Gross Expenditure on R&D (GERD) expressed as a percentage of GNP is estimated at 1.46% in 2017. Ireland is unlikely to achieve the EU's Europe 2020 target, recommitted to in Innovation 2020, to increase gross expenditure (public and private) in RDI to 2.5% of GNP within the timeframe set of 2020. While the overall level of public and private investment in RDI has been growing steadily, our strong economic growth rate makes it more difficult to increase the intensity level as a percentage of GNP. A 2025 target will be set in the context of developments at EU level and development of a successor to Innovation 2020.

¹⁰¹ [European Innovation Scoreboard 2018](#)

PILLAR 3. ENHANCING SKILLS AND DEVELOPING AND ATTRACTING TALENT

<i>KPI</i>	<i>Latest Scores</i>	<i>Baseline Date</i>	<i>2025 Target</i>	<i>Source</i>
<i>Lifelong learning rate</i>	8.9%	2017	18% ¹⁰²	EuroStat
<i>% of population with basic or above basic digital skills</i>	48%	2017	≥ EU Average ¹⁰³	DESI index Eurostat
<i>Cost of all Structured, Formal Training as a percentage of payroll in Irish enterprises</i>	1.1%	2016	1.5%	ABSEI

PILLAR 4. INCREASING PARTICIPATION IN THE LABOUR FORCE

<i>KPI</i>	<i>Latest Scores</i>	<i>Baseline Date</i>	<i>2025 Target</i>	<i>Source</i>
<i>Overall participation rate 25-69</i>	74.7%	2018	78%	LFS
<i>Female participation rate 25-59</i>	75.0%	2018	78%	LFS
<i>Older Peoples participation rate (>55)</i>	34.3%	2018	>38%	LFS
<i>Youth unemployment ratio¹⁰⁴</i>	6.4%	2017	<6%	LFS

PILLAR 5. TRANSITIONING TO A LOW CARBON ECONOMY

<i>KPI</i>	<i>Latest Scores</i>	<i>Baseline Date</i>	<i>2025 Target</i>	<i>Source</i>
<i>Share of total energy use from renewable sources</i>	10.6%	2017	20%	SEAI
<i>Number of residential retrofits</i>	21,430	2018	250,000	SEAI

Ambitious targets, including for CO₂ reductions, will also be set in the All of Government Climate Plan, which will seek to make Ireland a leader in responding to climate disruption.

¹⁰² EU target is ≥15%. This target is published in Ireland's National Skills Strategy 2025

¹⁰³ EU average in 2017 was 57%

¹⁰⁴ The youth unemployment ratio is the ratio of unemployed 15-24 year olds to all 15-24 year olds, both active and inactive, which is 6.4%. The ratio is intended to provide a deeper understanding about the overall labour market situation of young people, accounting for the higher propensity of this cohort to be in full-time education.

Appendix C. List of Abbreviations

AEC	Atlantic Economic Corridor
AI	Artificial Intelligence
AMETS	Atlantic Marine Energy Test Site
AMC	Advanced Manufacturing Centre
AR	Augmented Reality
BIG	Bioeconomy Implementation Group
BIM	Building Information Modelling
CAV	Connected and Autonomous Vehicles
CBI	Central Bank of Ireland
CIT	Cork Institute of Technology
CIWG	Cost of Insurance Working Group
CRM	Client Relationship Management
CSO	Central Statistics Office
CSR	Corporate Social Responsibility
DA	Disability allowance
DAFM	Department of Agriculture, Food and the Marine
DBEI	Department of Business, Enterprise and Innovation
DCCAIE	Department of Communications, Climate Action and Environment
DCHG	Department of Culture, Heritage and the Gaeltacht
DCYA	Department of Children and Youth Affairs
DEASP	Department of Employment Affairs and Social Protection
DEIS	Delivering Equality of Opportunity in Schools
DES	Department of Education and Skills
DESI	Digital Economy and Society Index
DFAT	Department of Foreign Affairs and Trade
DFIN	Department of Finance
DHPLG	Department of Housing, Planning and Local Government
DJE	Department of Justice and Equality
DPER	Department of Public Expenditure and Reform
DRCD	Department of Rural and Community Development

DTIF	Disruptive Technology Innovation Fund
DTTAS	Department of Transport, Tourism and Sport
EEZ	Exclusive economic zone
EGFSN	Expert Group on Future Skills Needs
EI	Enterprise Ireland
EIB	European Investment Bank
EN	European Standards
EPA	Environmental Protection Agency
EPD	Environmental Product Declaration
ERM	Enterprise Resource Management
ESB	Electricity Supply Board
ETBs	Education and Training Boards
ETS	Emission Trading Scheme
EVs	Electric Vehicles
EXEED	Excellence in Energy Efficient Design
FDI	Foreign direct investment
FET	Further Education and Training
FTAI	Freight Transport Association Ireland
GERD	Gross Expenditure on R&D
GPP	Green Public Procurement
GMIT	Galway-Mayo Institute of Technology
GVA	Gross Value Added
HE	Higher Education
HEA	Higher Education Authority
HIHI	Health Innovation Hub Ireland
HSE	Health Services Executive
ICT	Information and communications technology
IFS	International Financial Services
ILO	International Labour Organisation
IMR	Irish Manufacturing Research
IoT	Internet of Things
ISIF	Ireland Strategic Investment Fund
ISO	International Organization for Standardization

ITI	Irish Tax Institute
LEO	Local Enterprise Office
LSRA	Legal Services Regulatory Authority
MNE	Multinational Enterprises
NCC	National Competitiveness Council
NCCA	National Council for Curriculum and Assessment
NDP	National Development Plan
NESC	National Economic and Social Council
NPF	National Planning Framework
NSAI	National Standards Authority of Ireland
NTF	National Training Fund
NUIG	National University of Ireland Galway
NZEB	Nearly Zero Emissions Buildings
OECD	Organisation for Economic Co-operation and Development
OGCIO	Office of the Government Chief Information Officer
OGP	Office of Government Procurement
PIC	Personal Injuries Commission
PRSI	Pay Related Social Insurance
QQI	Quality and Qualifications Ireland
R&D	Research and Development
RD&I	Research, Development and Innovation
RPL	Recognised prior learning
RRDF	Rural Regeneration and Development Fund
SBCI	Strategic Banking Corporation of Ireland
SDGs	Sustainable Development Goals
SEAI	Sustainable Energy Authority of Ireland
SMEs	Small and medium-sized enterprises ¹⁰⁵
SMEE	SME and Entrepreneurship
STEAM	Science, Technology, Engineering, Arts and Mathematics
STEM	Science, Technology, Engineering and Mathematics

¹⁰⁵ Reference to SMEs includes micro enterprises as per the EU definition of an SME

TCD	Trinity College Dublin
UCC	University College Cork
ÚnaG	Údarás na Gaeltachta
UX	User Experience
VR	Virtual Reality
WWETB	Waterford and Wexford Education and Training Board
YESS	Youth Employment Support Scheme

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