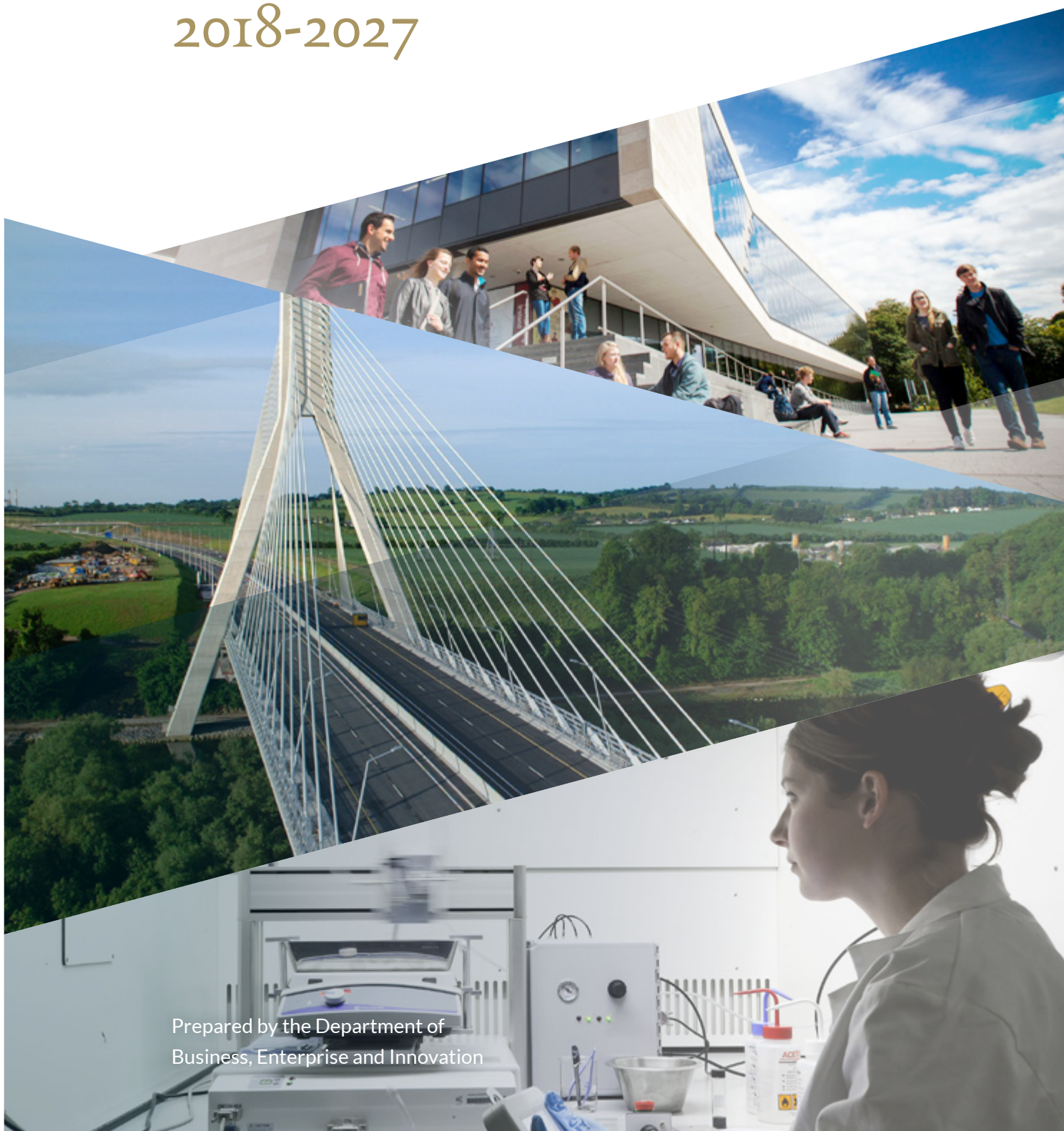




Rialtas
na hÉireann
Government
of Ireland

Tionscadal Éireann
Project Ireland
2040

Investing in Business, Enterprise and Innovation 2018-2027



Prepared by the Department of
Business, Enterprise and Innovation

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Taoiseach's Foreword

Project Ireland 2040 is the Government's overarching plan to make Ireland a better country for all of us, a country that reflects the best of who we are and what we aspire to be.

The objective of Project Ireland 2040 is to build a comprehensive social, economic and cultural infrastructure for all our people and all parts of the country to flourish, so that together we can create a better Ireland.

By 2040 we expect that an additional one million people will live in Ireland, with an additional two-thirds of a million people at work. These are demanding projections: more people will be travelling to work, school and universities; more buildings will be needed to accommodate them; clean water will be needed for homes and industry; more and better care facilities will be required for the elderly.

We need to manage the transition to a low carbon economy and society. We need to better balance growth across all regions of the country. We need to build resilience in the face of Brexit and other global challenges.

Without proper planning, growth will be haphazard and uneven. Without the required infrastructure, our potential for economic growth will stall.

Business, enterprise and innovation are the engines

that drive our economy and provide us with the means to foster wellbeing, and opportunity in our society.

Great gains have been made in recent years as we have emerged from the difficult and demoralising period of recession. Unemployment has fallen from over 15% to under 6%. And we now have the fastest growing economy in Europe.

Our country can once again look to the future with confidence. Project Ireland 2040 sets out the vision for that future. It is a strategic long term plan for a country that people want to live in, raise a family and grow old in.

It is a realistic and achievable framework to ensure we will have the infrastructure to cater for the extra one million people who will live in Ireland by 2040.

It will ensure we have the right environment so we can create the extra 660,000 jobs needed to meet that increase in population.

And crucially, for the first time, we have a coordinated approach which means we have a National Planning Framework which is backed up by investment of over €116 billion to deliver it.

As Ireland strives forward in the years ahead, we want to ensure that no one and no region is left behind.

Leo Varadkar T.D.
An Taoiseach



DBEI Ministers’ Foreword

Project Ireland 2040 recognises that economic and social progress go hand in hand. It is informed by the *National Planning Framework to 2040* and the *National Development Plan 2018-2027*, which both recognise that business, enterprise and innovation are the engines that drive our economy and enable us to attain the Project Ireland 2040 objectives of wellbeing, equality and opportunity in our society.

We are living in a rapidly changing world that is moving at a phenomenal pace. The Government wants Ireland to be a global leader in that change. And it is the young people of this country who will imagine, explore, innovate, and by doing so create the new ideas, enterprises and technologies that many of us can only dream of today - but by 2040 they will be a reality.

A competitive, innovative and resilient enterprise base is essential to provide the jobs and employment opportunities for people to live and prosper in all regions. Great gains have been made in recent years with unemployment falling from over 15% to under 6% but we cannot be complacent. An extra 660,000 people are expected to be employed in Ireland by 2040. The goal is to achieve sustainable full employment, to bring unemployment rates in all regions down to within 1% of the national average, and to progress regional productivity convergence.

Ireland has been outstandingly successful in attracting major foreign investment, generating high quality, large-scale employment. While aiming to retain our competitiveness for mobile international investment that can locate in any part of the country, it is equally important to develop our local enterprise economy.

Investment in enterprise will focus on boosting regional growth potential and incomes; increasing research, development and innovation, and investment in higher and further education and training. That is why through the Department of Business, Enterprise and Innovation, as part of Project Ireland 2040, we are very pleased to launch a new €500m Disruptive Technologies Innovation Fund that will drive collaboration between the research, education and enterprise sectors. This Fund will ensure we stay at the forefront in exciting new areas such as Artificial Intelligence, advanced manufacturing and the bio-economy.

The Disruptive Technologies Innovation Fund is not about business as usual. It is about ensuring that Ireland stays ahead of the game. Ireland has long been one of the EU’s frontrunner countries and this investment through the Fund will help us to create and safeguard the jobs of the future. We will pursue truly game-changing solutions for business consistent with the technological transformation of which we are part. Ireland has top-class enterprises and researchers and we will encourage proposals that involve collaboration between businesses, colleges and public sector bodies. Combining their strengths, successful project partners will help us to build new markets and tackle important societal challenges for the benefit of the people of Ireland.



And through our Institutes of Technology, right across the country, we are putting in place Technology and Innovation Poles, that will enable our institutes partner with enterprise to develop strategic agendas for their regions that will support SMEs, entrepreneurship and start-ups.

Project Ireland 2040 delivers for rural Ireland. Our resources in rural Ireland are among our most important. The agriculture, food, forestry, tourism and renewable energy sectors all contribute to sustaining local employment and contribute substantially to the national economy. Increased digital capabilities provide opportunities for remote working and allow new forms of digital enterprises to continue to grow. Ireland's rural areas will increasingly have the capacity to grow digitally enabled employment from ICT-based industries to multimedia and creative sectors.

Project Ireland 2040 gives people right across the country, whether living in remote rural areas, villages, towns or cities, opportunity – namely the opportunity to achieve their potential. Through this plan, communities, wherever they may be, now have the platform to build on their own unique strengths and be part of a dynamic and exciting modern Ireland.

The National Development Plan commits a total of almost €116 billion to underpin the implementation of the National Strategic Outcomes identified in Project Ireland 2040. A 'Strong Economy, supported by Enterprise, Innovation and Skills' is one of these key outcomes. The Plan specifically commits a total of €3.16 billion of capital funding to deliver the Business, Enterprise and Innovation Priority Investments Projects highlighted in Project Ireland 2040 over

the five years to 2022. The allocation of this funding will be key to ensuring that our Department and its Enterprise Agencies can support the business and enterprise sector to create the additional 660,000 jobs which Project Ireland envisages will be required by 2040.



A handwritten signature in black ink that reads "Heather Humphreys".

Heather Humphreys T.D.
Minister for Business, Enterprise and Innovation



A handwritten signature in black ink that reads "Pat Breen".

Pat Breen T.D.
Minister of State for Trade, Employment, Business, EU Digital Single Market and Data Protection



A handwritten signature in black ink that reads "John Halligan".

John Halligan T.D.
Minister of State for Training, Skills, Innovation, Research and Development



Introduction

Project Ireland 2040 is the Government's overarching policy initiative to make Ireland a better country for all of us, a country that reflects the best of who we are and what we aspire to be.

Project Ireland 2040 is informed by the Programme for a Partnership Government 2016, which recognises that economic and social progress go hand in hand and comprises the *National Planning Framework* (NPF) to 2040 and the *National Development Plan* (NDP) 2018-2027.

Project Ireland 2040 seeks to achieve ten National Strategic Outcomes (NSOs), building around the overarching themes of wellbeing, equality and opportunity and representing the ten priorities of the *National Planning Framework*.

These ten shared priorities will ensure a consistent approach between planning objectives under the National Planning Framework and associated investment commitments under the *National Development Plan*, boosting national potential, productivity and prosperity over the next two decades.

The ten NSOs are:



1. Compact Growth
2. Enhanced Regional Accessibility
3. Strengthened Rural Economies and Communities *
4. Sustainable Mobility
5. A Strong Economy, Supported by Enterprise, Innovation and Skills †
6. High-Quality International Connectivity
7. Enhanced Amenity and Heritage
8. Transition to a Low Carbon and Climate Resilient Society
9. Sustainable Management of Water and other Environmental Resources
10. Access to Quality Childcare, Education and Health Services

* Supported by DBEI † Led by DBEI and DES

The Department of Business, Enterprise and Innovation (DBEI), in conjunction with the Department of Education and Skills (DES), is responsible for leading the delivery of National Strategic Outcome (NSO) 5: A Strong Economy, supported by Enterprise, Innovation and Skills. DBEI will also play a key role in supporting delivery of NSO 3: Strengthened Rural Economies and Communities, for which the lead departments are the Department of Rural and Community Development (DRCD) and the Department of Agriculture, Food and the Marine (DAFM). In the more immediate term, DBEI is also centrally focused on ensuring that the business sector is prepared and resilient to face the challenges of Brexit and that we sustain the important progress made in developing the island economy and in particular the local economies of the North-West and North-East regions.

National Strategic (NSO) 5: A Strong Economy, Supported by Enterprise, Innovation and Skills

A competitive, innovative and resilient enterprise base is essential to provide the jobs and employment opportunities for people to live and prosper in all regions. Achieving the ambitious employment and income targets in the NPF in the context of increased global uncertainty, Brexit and technological disruption, underlines the importance of building competitive regional clusters and generating an uplift in enterprise export competitiveness and productivity to secure sustainable jobs and growth.

The vision for national enterprise policy as set out in Enterprise 2025 Renewed: Resilient – Innovative – Globally Connected is for Ireland to be the best place to succeed in business, delivering higher standards of living for all. Specifically, the national policy goal is to:

- Achieve sustainable full employment;
- Bring unemployment rates down to within 1% of the national average in all regions; and
- Achieve regional productivity convergence so all regions are within 10% of the average outside Dublin and with international comparators.

National Development Plan (NDP) Priority: Enterprise, Skills and Innovation

The *National Planning Framework* (NPF) envisages population growth of one million by 2040 and sets a framework for where all our people will live, work and enjoy life. In relation to employment growth, the NPF sets the ambition of ensuring that jobs growth in the Eastern and Midland Regional Assembly area is at least matched by that of the Northern and Western and Southern Regional Assembly areas, delivering a combined total of an additional 660,000 new jobs by 2040.

This ambition for Ireland's regions will be achieved by investing, through the *National Development Plan* (NDP), in making places attractive for enterprise investment, developing deeply rooted sectoral clustering driven by effective collaborations and built around investments in Higher Education and Further Education and Training (FET). The way in which skills and talent are nurtured, developed, deployed and retained is central to both national and regional ambitions.

Enterprise and innovation strategy will be aligned to the NPF strategy with a particular focus on regional economic and employment growth to secure competitive and innovative regional enterprises. Investment in higher and further education and training in each region will have a crucial role to play in achieving this objective in terms of the pipeline of skills and talent that sustains enterprise clustering and new investments. This will be achieved under the *National Development Plan* by:

- Attracting further investment to the regions;
- Supporting entrepreneurialism and building competitive clusters in strategic sectors and activities;
- Collaborative actions at regional and local level; and
- Realising a significant uplift in the performance of enterprises in terms of innovation, export potential and productivity.



Investment Overview



Summary of the Strategic Investment Priorities to Deliver NSO 5


The vision and targets in the *National Planning Framework* are ambitious and the *National Development Plan* sets out how those ambitions will be achieved. The key actions are illustrated opposite under three key themes to deliver National Strategic Outcome (NSO) 5: A Strong Economy, supported by Enterprise, Innovation and Skills.

The Department of Business, Enterprise and Innovation (DBEI) is taking the lead on delivering all the priorities outlined under the 'Business Enterprise' and 'Innovation' themes – the details of which are outlined later in this report.

The Department of Education and Skills (DES) is taking the lead in delivering the priorities outlined in the 'Investments in Enterprise, Innovation and Skills' theme and will produce a separate report at a later stage that will elaborate upon the details.

Strategic Investment Priorities 2018 - 2027: A Strong Economy supported by Enterprise, Innovation and Skills, €9.4 billion

Business Enterprise 	Innovation 
Expansion of Advanced Manufacturing Supports, linking centres and capacity across all regions	Disruptive Technologies Innovation Fund
New Regional Sectoral Clusters to scale and internationalise enterprise in all regions	Strengthened SFI Research Centres and EI Technology Centres in higher education in all regions
New regional 'Technology and Innovation Poles', led through the Institutes of Technologies	Participation in EU High Performance Computing Programme
Brexit Business Transformation through firm level supports	Upgrading of the Tyndall National Institute in Cork
Expanding Enterprise Ireland budget for research and development	New Space Technologies Programme, to the benefit of firms in the regions
Expanding IDA Regional Property Programme, to attract investment to regions	Membership of CERN
A National Design Centre	New cycles of the Programme for Research in Third Level Institutions, benefiting Higher Education in all regions
Seed and Venture Capital Funding to support regional start-ups and growth	
eHubs for entrepreneurship and start-ups in every county	

Investments in Enterprise, Innovation and Skills 
Public Private Partnership Investments in 11 Institutes of Technology
Consolidation of the DIT campus at Grangegorman
Enabling emergence of technological universities
Consolidation of further education and training in modern, fit-for-purpose facilities
Refurbishment and expansion of higher education facilities
Capital supports for new apprenticeship syllabi and courses
Support for research, guided by <i>Innovation 2020: Ireland's Strategy for Research and Development, Science and Technology</i>

Summary of the Indicative Resource Allocations 2018-2027 of Delivery of NSO 5

Below is an excerpt from the NDP which gives indicative resource allocations for the delivery of all the Strategic Investment Priorities under NSO 5: A Strong Economy, supported by Enterprise, Innovation and Skills, over the period 2018-2027:

€ billion	Exchequer	Non-Exchequer	Allocation
5. A Strong Economy, supported by Enterprise, Innovation and Skills (Lead Departments: DBEI, DES)			9.4
of which: Higher/Further Education	3.1		
University Investment		2.0	
BEI Programmes	3.0		
Challenge Based Disruptive Innovation Fund	0.5		
Enterprise Agencies		0.8	

Funding Challenges Associated with Delivery of NSO 5

The *National Development Plan* allocates indicative resources for the delivery of the ten specific National Strategic Outcomes identified under the *National Planning Framework*. The funding being provided under the NDP will be focused on implementing the Strategic Investment Priorities necessary to achieve these National Strategic Outcomes.

To that end the NDP sets out indicative departmental capital allocations for the period 2018 to 2022. A total of €3.16 billion is being provided by the exchequer in capital funding to DBEI for the first five years of the Plan. The annual allocations proposed for DBEI under the Plan are set out below:

2018	2019	2020	2021	2022	Total
€555m	€620m	€630m	€640m	€715m	€3.16 billion

DBEI's capital ceiling will increase by almost 29% over the first five years of the Plan. This increase in the Department's capital funding will be key in implementing the specific Business, Enterprise and Innovation Priority Investment Projects identified in the Plan.

Specifically, the increased capital funding for the first five years of the Plan will ensure that:

- The new €500m Disruptive Technology Innovation Fund can be launched in 2018.
- Competitive calls for enterprise initiatives under the Regional Enterprise Development Fund, with €30m to be allocated in 2018, will continue to be rolled out in the first five years of the Plan.
- IDA Ireland’s current Regional Property Programme of €150m can be built upon to deliver enterprise property solutions across the regions.
- The number of researchers trained under DBEI research, development and innovation (RD&I) programmes can be increased as envisaged under the NDP.
- Science Foundation Ireland (SFI) can continue to fund excellent research teams including through its Research Centres Programme.
- The Seed and Venture Capital finance for start-up and early-stage businesses and the launch of a new Seed and Venture Funding Programme for 2019 can be developed.

The *National Development Plan* commits a total of almost €116 billion of combined Exchequer (€91 billion) and non-Exchequer (€25 billion) capital funding to underpin the implementation of the National Strategic Outcomes identified in Project Ireland 2040.

A total of €38.5 billion of the overall €91 billion in Exchequer funding committed under the NDP has been provided by way of Departmental indicative capital allocations for the initial phase of the Plan. The indicative funding being provided to the Department in Phase 1 will ensure that robust progress can be achieved in implementing the Business, Enterprise and Innovation’s Priority Investment Projects in the first five years of the Plan.

The capital allocation for DBEI in the first five years of the NDP to 2022 is to increase by 29% from the 2018 base, which will enable a positive start to delivering on the ambition of the NPF and NDP. It is recognised that the full implementation of the Priority Investment Projects under NSO 5 will also require the allocation of substantial capital funding over the period of the Plan and DBEI and the Department of Public Expenditure and Reform (DPER) will work together as part of the annual estimates processes to ensure that all the aforementioned Business, Enterprise and Innovation Priority Investment Projects are fully implemented within the lifetime of the Plan to secure the desired outcomes.





Brexit Challenges and Opportunities

Through Project Ireland 2040 we are preparing for the significant population growth that is forecast for the island of Ireland as well as laying the foundations to ensure sustainable economic growth can continue. Our investment priorities will ensure that our economy remains competitive and resilient in the face of the range of changes in the external environment, including the UK's decision to leave the EU. Ireland and the UK joined the EU together 45 years ago and the interlinkages between our economies have strengthened. North-South trade in particular has prospered with the introduction of the Single Market and the Good Friday Agreement.

The *National Planning Framework* and the *National Development Plan* are a crucial part of our response to sustaining a successful, prosperous and peaceful island of Ireland after Brexit. We will face

the challenges Brexit poses with optimism and determination. We will also work hard to seize the opportunities that change presents. The Government is intensifying its focus on the economic implications of Brexit, including on domestic policy measures to reinforce the competitiveness of the Irish economy, to strengthen it to deal with potential negative impacts of Brexit, and to pursue all possible opportunities that might arise.

The Department of Business, Enterprise and Innovation (DBEI) plays a key role in implementing the Government's policies to stimulate the productive capacity of the economy and create an environment which supports job creation and jobs maintenance. Brexit impacts upon all of these areas, and on many others within the Department's remit, including in relation to certification and standards, business regulation and health and safety.

Building Stronger Business – Responding to Brexit by Competing, Innovating and Trading

In November 2017, DBEI published our plan for managing through the implications of Brexit entitled, *Building Stronger Business – Responding to Brexit by competing, innovating and trading*, which focuses on the response of DBEI to the range of challenges and opportunities arising as a result of Brexit. It summarises the policy measures we have already taken, those we plan to take, our research programme designed to inform these policies, and the Departmental structural reforms put in place to ensure that we can work as efficiently and effectively as possible to support our companies. Of course, it does not stand alone. It forms an integral part of the Government’s overall strategy and response to Brexit which is underway across all departments and agencies.

Ultimately, the enterprise agenda of DBEI and our agencies is focused on growing jobs through growing business. We achieve this by increasing exports and inward investment. Our policies, programmes and supports to enterprise are centred on fulfilling this agenda. Brexit heightens the importance of this agenda but should not deflect us from our long-term, core goals. In the context of Brexit, our strategy is to minimise risks and maximise opportunities by ensuring the growth and resilience of Irish enterprise working across four pillars which are:

- **Helping Firms to Compete:** We are working across Government to create the best environment for business to grow, export and create jobs. Key elements include ensuring that firms have access to finance, our tax regime and infrastructure spend promote national competitiveness and the agencies are appropriately resourced to help business focus on competitiveness at firm level.
- **Enabling Firms to Innovate:** As part of our strategy to become a global innovation leader, we are targeting research and development (R&D) funding through our agencies to support innovation in new products and processes which firms need to compete and grow, and to invest in the pipeline of the next generation of innovators through a new postgraduate researcher programme.

- **Supporting Firms to Trade:** We are supporting firms to start exporting, to grow their exports in existing markets and to diversify into new markets and regions. We will continue to attract overseas investment while working with EU partners to expand the portfolio of Free Trade Agreements.
- **Negotiating for the Best Possible Outcome:** We are working across government to ensure we get the best outcome possible for business from Brexit negotiations. DBEI is leading a range of Brexit research projects which will provide an extensive evidence base and valuable analysis to inform and guide Ireland’s position within the EU-27.

In identifying new actions to support our companies, we must also be cognisant of all the existing supports that are in place. We intervene in markets and support companies in a variety of ways – the challenge is to ensure that these interventions remain relevant, appropriate and effective, and that all of our companies, across the full spectrum of sectors, are enabled to the extent possible to trade successfully and grow.

Our response to the UK decision to leave the EU has been evolving significantly over the last year and more and will continue to evolve in the months and years ahead as the future relationship between the UK and the EU becomes clearer.

NDP - Initial Brexit Priority Investment Actions

The *National Development Plan* (NDP) focuses on the implications of Brexit and highlights a number of initial Brexit Priority Investment Actions, many of which are led by DBEI and which form part of its investment priorities to deliver National Strategic Outcome (NSO) 5: A Strong Economy, supported by Enterprise, Innovation and Skills. The illustration overleaf depicts a summary of these Initial Brexit Priority Investment Actions and is followed by updates on the DBEI led actions.

By implementing the investment decisions contained in the *National Development Plan*, we can ensure we have a strong, productive and resilient economy for the years ahead.

Initial Brexit Priority Investment Actions

Developing North-South Research and Innovation capability

- Seven INTERREG Research and Innovation Strand projects
- Funding totalling €53 million will be provided over the next four years
- High level research will be undertaken on health and life sciences and renewable energy

Promoting Research and Innovation for SMEs

- INTERREG Research and Innovation Strand specific initiative to assist SMEs
- Funding of €18 million will be provided over the next four years
- A total of 1,408 companies will receive basic support

Assisting SMEs to prepare for Brexit

- €300 million Brexit Working Capital Loan scheme
- Developing longer-term loan finance initiatives to support business transformation
- EI will assist 1,000 firms to develop and implement sustainability and growth plans
- InterTrade Ireland, will continue their supports for SMEs trading across the Border
- Bord Bia to work with food and beverage firms in regions to strengthen strategic marketing

Attracting new Investment

- IDA Ireland will actively market the regions for opportunities arising from Brexit
- IDA Regional Property facilities and advanced provision in Border regions will be enhanced

Development of Science Expertise in the North-West

- Two purpose-built facilities were provided in Derry and Letterkenny as part of the previous INTERREG programme, to enhance technical research and commercialisation of innovation
- This successful initiative will continue to be supported over the coming years

North-South Capital Investment in Tourism

- Investment in digital infrastructure for all island tourism marketing

Facilitating Cross-Border Sustainable Transport

- North-West Multi-modal Mobility Hub
- North-West Greenways
- Carlingford Lough Greenway
- Ulster Canal Greenway

NDP - Updates on DBEI Initial Brexit Priority Investment Actions

Actions	Progress Updates
<p>Developing North-South Research and Innovation capability</p> <ul style="list-style-type: none"> Seven INTERREG Research and Innovation Strand projects Funding totalling €53 million will be provided over the next four years High level research will be undertaken on health and life sciences and renewable energy 	<ul style="list-style-type: none"> Seven projects have been issued Letters of Offer to date at a cumulative value of €54.7m.
<p>Assisting SMEs to prepare for Brexit</p> <ul style="list-style-type: none"> €300 million Brexit Working Capital Loan scheme Developing longer term loan finance initiatives to support business transformation Enterprise Ireland (EI) will assist 1,000 firms to develop and implement sustainability and growth plans InterTrade Ireland, will continue their supports for SMEs trading across the Border 	<ul style="list-style-type: none"> The Brexit Loan Scheme was launched at the end of Q1 and a steady stream of applications have now gone through the eligibility screening process. Development of an Investment Loan Guarantee Scheme (subject to budgetary approval) to support the long-term financing needs of businesses is ongoing. On track to have completed sustainable growth plans with 1,000 Brexit impacted firms by end 2018. InterTrade Ireland continues to support businesses, through their innovation and trade initiatives, to take advantage of North/South co-operative opportunities to improve capability, and drive competitiveness, jobs and growth.
<p>Development of Science Expertise in the North-West:</p> <ul style="list-style-type: none"> Two purpose built facilities were provided in Derry and Letterkenny as part of the previous INTERREG programme, to enhance technical research and commercialisation of innovation This successful initiative will continue to be supported over the coming years 	<ul style="list-style-type: none"> These purpose built facilities continue to be involved in current INTERREG research and innovation projects in the North West.
<p>Promoting Research and Innovation for SMEs</p> <ul style="list-style-type: none"> INTERREG Research and Innovation Strand specific initiative to assist SMEs Funding of €18 million will be provided over the next four years A total of 1,408 companies will receive basic support 	<ul style="list-style-type: none"> The Co-Innovate Programme, led by InterTrade Ireland, has been issued a Letter of Offer to carry out this initiative. It will be implemented across the eligible region of Northern Ireland, the Border Region of Ireland and Western Scotland and aims to target manufacturing and tradable services SMEs with export potential. Its key objective is to increase the proportion of SMEs engaged in cross-border research and innovation collaboration in the eligible region, from 22% (2014) to 33% (2023).
<p>Attracting new Investment</p> <ul style="list-style-type: none"> IDA Ireland will actively market the regions for opportunities arising from Brexit IDA Ireland regional property facilities and advanced provision in Border regions will be enhanced 	<ul style="list-style-type: none"> IDA Ireland has restructured its European operations to treat the UK as a separate market and has undertaken a customised Brexit related marketing campaign to attract investment to the regions. It has also held Brexit events in key locations including London, New York and Hong Kong. IDA Ireland has successfully won in the region of 40 Brexit-related projects and is working to capitalise on further opportunities. IDA Ireland is looking to enhance its regional property facilities in the border region. So far it has delivered an advanced building in Sligo with a new building planned in Dundalk within the next two years.



A Strong Economy, Supported by Enterprise, Innovation and Skills

The illustration opposite summarises the key DBEI-led Strategic Investment Priorities identified in the National Development Plan 2018-27 to deliver National Strategic Outcome (NSO) 5: A Strong Economy, supported by Enterprise, Innovation and Skills.

Overview of DBEI-led Investment Actions



Investment in Disruptive Technologies

Disruptive technologies have the potential to truly reshape the world in which we live and work. They can significantly alter markets and their functioning and change the way that businesses operate. Under Project Ireland 2040 DBEI is launching a new €500 million Disruptive Technologies Innovation Fund (DTIF).

Ireland has a number of key characteristics that underpin its ability to create, develop and deploy new disruptive technologies:

- A world class research, development and innovation (RD&I) ecosystem;
- An agile and competitive export led enterprise base;
- A highly skilled and innovative workforce; and
- A Government that is willing to support innovation.

Ireland's research, development and innovation (RD&I) ecosystem comprises businesses, higher education institutions, research performing organisations and enterprise agencies that collaborate on innovation projects ensuring the resulting product, service or technology has commercial application.

The establishment of a €500m Disruptive Technologies Innovation Fund (DTIF) will further drive this collaboration between our research base and industry in support of the development and adoption of these technologies which will in turn help build new markets and strengthen the competitiveness of the enterprise sector.

The Disruptive Technologies Innovation Fund will:

- Align with national policy objectives including positioning Ireland as a global innovation leader;
- Fund projects on the research, development and innovation spectrum that are truly disruptive;
- Ensure additionality to existing R&D funding programmes;
- Facilitate co-funding and leveraging of non-Exchequer funding;
- Align with Ireland's Research Priority Areas for 2018-2023 in areas such as robotics, artificial intelligence, augmented and virtual reality, advanced and smart manufacturing and smart and sustainable food production and processing; and
- Ensure the development and application of these technologies for commercial use to guarantee the jobs of the future.

This fund is not about business as usual; it is about ensuring that Ireland can stay ahead of the game. Our investment through the fund will help us to create and safeguard the jobs of the future. We're living in the technological revolution and are looking for proposals for truly game-changing solutions.

To ensure the objectives of the DTIF are delivered, the Department of Business, Enterprise and Innovation will shortly establish and chair an Advisory Board comprised of nominated members of Science Foundation Ireland (SFI), Enterprise Ireland (EI), IDA Ireland, Department of Public Expenditure and Reform and others.

Announcements on the first successful projects to be funded in 2019 will be made by end 2018.

Investing in Regional Growth Potential

A comprehensive and integrated programme of measures will be initiated as set out under the NDP to strengthen growth and employment potential with a particular focus on balanced regional development by building competitive and innovative enterprises including the initiatives detailed below.

Future employment growth will require a major focus on boosting enterprise productivity and growth potential in all regions. This means creating the conditions for growth that are sustainable, driven by exports and underpinned by innovation and competitiveness in every region.

Under the Regional Action Plan for Jobs (RAPJ) process, the focus on enterprise development and employment generation in the regions has intensified through a collaborative approach involving both public and private sector stakeholders in the regions. In support of the RAPJs, the €60 million competitive Regional Enterprise Development Fund, launched in May 2017 has, to date, supported 21 regional enterprise initiatives around the country that have emerged from the ground-up, and a second call for proposals is underway. Following the award of an initial €30m in December 2017, a second call for proposals for a second tranche of €30m of funding was launched in April 2018 and will be awarded in the latter part of the year.

Employment creation has gathered pace in the regions, with more than 118,000 new jobs created for people living outside Dublin since the RAPJs were launched in 2015. We will sustain the emphasis on ensuring that all regions are developing to their potential. We not only need to keep a focus on job creation and retention, we also need to ensure that the jobs created are of good quality and sustainable over the longer term. We must ensure that regions are enabled to compete in today's fast paced global business environment so that they provide attractive places for people to live and work, and for businesses and entrepreneurs to invest and reinvest.

This involves building on regional enterprise strengths and capabilities, addressing vulnerabilities, and leveraging new growth opportunities. We will need to further strengthen regional enterprise ecosystems; through enabling regional level clustering and collaboration amongst firms (Irish and foreign owned); through ensuring that enterprises based anywhere in Ireland can access technological expertise, talent and innovation; by providing the necessary supports to accelerate entrepreneurship and business scaling; and by ensuring that we have world class and internationally competitive regional property solutions available to rapidly facilitate new business investment and expansion.

DBEI is currently working with regional partners to refresh and refocus the Regional Action Plans so that investment is targeted at the right areas and that the added value from collaboration is realised.

Increasing the Scale and Internationalisation of Indigenous Enterprise

Increasing the scale and internationalisation of indigenous enterprise is at the core of the ambition of the *National Development Plan* and of Enterprise Ireland's strategy *Build Scale, Expand Reach 2017 – 2020*. This strategy seeks to inspire more Irish owned companies to have global ambition and to grow the annual exports of client companies by €5bn to reach €26bn in 2020.

The strategy is built around fostering entrepreneurship to create more globally competitive start-ups, enhancing leadership in Irish companies, strengthening competitiveness at firm level and placing innovation centre stage.

As part of the NDP and of the Government's new Global Ireland: Ireland's Global Footprint to 2025 initiative launched in early June 2018, EI will expand Ireland's global business footprint, substantially growing eurozone exports, seeking new opportunities for Irish firms in high-growth markets, and developing the market and sector opportunities of the future.

To support the diversification of Irish exports to new markets, Enterprise Ireland (EI) published a eurozone strategy to assist Irish exporters increase exports in eurozone countries by 50% by 2020.

To best support enterprises deliver on this ambition in the short term, EI has introduced a new *Global Ambition* campaign, introduced new supports and streamlined others, including for example:

- **Market Discovery Fund:** In January 2018 EI launched a new Market Discovery Fund to incentivise companies to research viable and sustainable market entry strategies in new geographic markets;
- **Agile Innovation Fund:** In November 2017, EI launched a new fast-track Agile Innovation Fund to give companies rapid access to innovation funding. This fund supports companies in sectors with rapid design cycles to maintain their technology position;
- **An Operational Excellence offer** has been developed by EI, designed to incentivise established Irish based export oriented companies to address a company's needs across key aspects of their value chain and business operations; from supply chain management, internal business and production operations, and through to logistics

and distribution networks;

- **#IrishAdvantage:** Aimed at international buyers, the Irish Advantage campaign is a digital and PR initiative with the objective of building awareness of Irish capability in key sectors and to drive new buyer introductions for EI client companies. Launched in 2017, an initial pilot of this initiative was focused on two sectors (Medtech and Construction) and three eurozone markets; France, Germany and Benelux. Currently this campaign targets 17 markets and 10 sectors.

Over the longer term, and to drive the building of resilience to economic shocks, EI will continue to work with their clients putting increased emphasis on market diversification, driving innovation and competitiveness as the key to long term success.

EI is seeking to produce, jointly with client companies, 1,000 Sustainable Growth Plans. These plans will contain concrete actions to make changes to improve the operational capability of the business and/or change the strategic focus of the business. These plans will address inherent weaknesses highlighted by the current economic environment to ensure sustainable growth. To date, over 700 Sustainable Growth Plans growth plans have been produced.

Regional Sectoral Clustering

Regional sectoral clustering initiatives support the development of business-led sectoral clusters of competitive advantage, including through collaboration between SMEs and multinational corporations, higher education and the enterprise agencies.

Clustering such as in the areas of engineering and agritech, medtech and aviation services, for example, provide the opportunity for smaller firms to learn the wider aspects of their business sector and to share that learning and expertise. It also strengthens a firm's capacity to supply and co-supply as part of major multinational and international contract opportunities.

For example, in the Shannon region, EI has provided support for the establishment of:

- **The Emerald Aero Cluster Group** under the Regional Enterprise Development Fund. This is a cluster of 14 indigenous manufacturing companies brought together with the specific purpose of increasing aerospace manufacturing export revenues for members and aerospace business for

the Republic of Ireland;

- The establishment of a start-up accelerator programme to further enhance the aviation and the aerospace start-up ecosystem within Ireland; and
- Under the Community Enterprise Initiative Scheme in 2016, EI announced funding to the Aviation and Aerospace Incubation Centre for the development of a facility for the setting up of the Aerospace and Aviation Enterprise and Incubation Centre in Shannon offering facilities and support to entrepreneurs and start-up companies.

New Technology and Innovation Poles

The key to Ireland's enterprise development is to create and grow businesses that are globally competitive and achieve success in markets through talent, technology and innovation. To do that Ireland needs the resources and the talent to develop and commercialise technological applications and solutions that can be successful in international markets.

Technology and Innovation Poles will see a further scaling of the capability of the institutes of technology (IoTs), in a planned, internationally ambitious way, that creates centres of excellence for both generating high-levels of entrepreneurship and spin-outs in the regions and also as key activators in supporting firm-level innovation, productivity, scaling and internationalisation.

This will support the national drive towards transforming the enterprise potential and performance in all regions, closing the gap in the regional productivity and providing quality and rewarding employment over the coming decades.

The vision aims to scale the IoTs' activities as economic and entrepreneurial actors in their regions, so they engage with more businesses that will embed, grow and outlast the various economic cycles.

Over the coming decade, this programme will see the IoTs developing as Technology and Innovation Poles in nearly every region, working with enterprises in their functional area in particular and specialising on local/regional strengths or as a centre of excellence in areas of national priority.

This investment in regional enterprise development will complement the investment in productivity-

enhancing support infrastructure under the NDP - transport, housing, health, education and amenities - to ensure the competitiveness of the location from a business perspective and an attractive quality of life for employees. To maximise the economic return on that investment requires investment in stimulating the start-up, growth and scaling of internationally competitive enterprises with deep roots in their regions.

To deliver stronger economic regions and more balanced regional growth would require a hothouse approach - major investment simultaneously in the people, the technology and the growth finance, as well as other elements of the ecosystem - to multiply the number of high potential start-ups in each region.

To realise the objective of home grown regional enterprises of international scale and potential requires a far more radical approach than previously, involving major investment in the research, technology, skills and enterprise support system (including seed and venture capital) in the regions - with the IoTs at the centre.

With a further round of investment in IoT facilities, expertise and supportive capabilities - as well as greater inter-institutional collaboration - the Institutes are well placed to be the drivers of global-potential start-ups and growth enterprises in and across the regions, as well as operating in responsive mode either to local business or external sources of funding.

The opportunity now exists for a further step-change to:

- Bring the IoT model, as a driver of technology development, advanced skills to much greater focus on enterprise spin-out and firm-level innovation, productivity, scaling and internationalisation; and
- Invest in collaborative work between IoTs, and other national and regional actors, to create a regional/cross regional high tech hothouse concept, generating and incubating a proliferation of high potential start-ups embedded in the region and on transforming existing enterprise base through collaborative and peer-to-peer enterprise-led initiatives.

The proposal is to establish a multi-annual programme based on:

- Two or more IoTs in a region collaborating across technologies, industries, sectors and skills, linked to future areas of potential;

- The creation of the supporting facilities and the personnel, to international standard, to deliver the above; and
- Investment in a regional ecosystem fund to translate the above capability into viable business propositions and jobs – growth development capital, leadership and capability development, product and market development – again utilising international standard expertise

Regional Entrepreneurship

The goal of achieving a one-third increase in levels of entrepreneurship and survival of start-ups that are trading in all regions will be pursued through the Local Enterprise Offices (LEOs) and Enterprise Ireland (EI), through new eHubs, mentoring and collaborative initiatives at sector level and through the Regional Enterprise Development Funds.

EI supports companies in urban and rural areas to start and scale, now and into the future. This is vital for the building of the next generation of Irish industries and to support start-ups to scale more quickly. A key element of this is ensuring that a region's entrepreneurial assets are fully utilised to harness the entrepreneurial power within it. To support this activity, EI provides entrepreneurs and

start-ups with a range of supports aligned to their stage of growth and level of ambition; key initiatives include:

- EI's new Frontiers Development Programme for early-stage startups run in partnership with 14 IoTs throughout the country;
- A Competitive Start Fund designed to enable startup companies to reach key technical and commercial milestones; and,
- Support for High Potential Start-Ups, start-up businesses with the potential to develop an innovative product or service for sale on international markets and the potential to create 10 jobs and €1m in sales within 3 to 4 years. This support includes an equity investment of up to €250,000 in the company.

Driving entrepreneurship at local level will be a key part of the Government strategy for the next twenty years. The LEOs, which were established in 2014, have been promoting entrepreneurship and will continue to play a key role in the delivery of this strategy. The 31 LEOs nationwide, run in partnership by EI and the Local Authorities, provide a 'first stop shop' for the supports available to entrepreneurs, start-ups, and micro enterprises. The LEOs can offer direct grant aid to microenterprises in the manufacturing and internationally traded services sectors which, over time, have the potential to develop into strong export entities.



Since the establishment of the LEOs in 2014:

- 15,000 Net Jobs created. What is also significant is that there are parts of the country where the LEO is the primary source of new business ideas and new jobs;
- Almost 1,300 clients approved for Priming Grants (start-up funding) to enterprises within the first 18 months of start-up; and
- Almost 7,500 training programmes (with over 100,000 participants) including start your own business programmes, management training and lean competitiveness training

The LEO's flagship programme - Ireland's Best Young Entrepreneur (IBYE) - has attracted 5,700 participants since inception in 2015 and research shows that the businesses which won investment are generating over €120 million in revenue and employing over 2,200 people.

Going forward the LEOs will continue to develop the suite of supports available to entrepreneurs on their business journey to enhance scalability of their business, to innovate for the future and develop new products in collaboration with and as part of Project Ireland 2040.

eHubs

Over the next 20 years advances in digital technologies will transform the enterprise potential across the country, particularly in our smaller towns and rural areas. To maximise those opportunities, co-working spaces (or eHubs), will enable tech (and non-tech) entrepreneurs to collaborate and to access to the supports they need to make their business successful. eHubs will also play an important role in facilitating remote working which offers many benefits to businesses and to individuals and contributes to balanced regional employment.

eHubs tend for the most part to be local initiatives, involving the local authorities, local private stakeholders and communities, as well as State agencies such as Údarás na Gaeltachta, EI and LEOs.

While eHubs will differ in size, ownership and management structures, target audience and offerings, they share a number of broad characteristics:

- Creative and collaborative working environments that can stimulate innovative thinking; and
- Significant local community support and involvement.

In terms of eHub support for business ideas and young businesses, the State and private sources need to provide a range of offerings:

- Suitable physical accommodation including hot desks for remote working and office space for small businesses and start-ups) and the availability of advanced broadband access. The State supports an array of activities such as Community Enterprise Centres, co-working space and business incubators. The private sector, e.g. local Chambers of Commerce also make such working space available. Ideally these centres should be well networked to other supports e.g. mentoring arrangements, finance facilities, business development supports.
- Innovation thinking: A feature of such facilities that is particularly important for tech-based business is co-working with other innovative companies where a culture of innovation pervades.
- Access to business advice: Regardless of the nature of the product or market, business advice and support is invaluable, and financial advice in particular. That may take the form of mentoring (sometimes State provided but also local mentoring networks are available); large companies locally may make their business experience available; other sources of support or business training e.g. through the LEO or local business networks; for R&D based businesses, access to expertise in the higher education system may be important. All these services should be scoped out locally to maximise the potential of eHub businesses.
- Access to finance: while local banks are the obvious source of working capital (and perhaps equity investment), there are a number of other sources – the State (EI, LEOs, Microfinance Ireland (MFI), state supported accelerator programmes) and there are sources of private investment e.g. business angels, tax breaks for private investors, crowdfunding, accelerators.

Regional Enterprise Infrastructure - €60 million EI Regional Enterprise Development Fund

In May 2017, with funding from the Department of Business, Enterprise and Innovation, EI launched the first phase of the €60 million Regional Enterprise Development Fund designed to support the ambition, goals, and implementation of the Regional Action Plans for Jobs.

The results of the first call under this Fund were announced by Minister Humphreys on 11 December 2017. Twenty-one collaborative projects involving a range of enterprises and public bodies were successful, totalling €30.5 million in aggregate grant approvals. The second call (closing date June 28th, 2018) will fund projects from the remaining €30 million.

Of the funding allocated to date €14.3 million was approved for the Southern Regional Assembly area, €11.1 million was approved for the Eastern and Midlands Regional Assembly area and €5.1 million was approved for the Northern and Western Regional Assembly area.

Enterprise-led sectoral clustering initiatives approved include KerrySciTech in Kerry/Cork, BPO Cluster Ireland, Irish BioEconomy Foundation in Tipperary, Emerald AeroCluster in Limerick/ Shannon, and it@cork.

Innovation and technology partnership collaborations approved include, InsurTech Network Centre in Carlow, AgriTech Centre of Excellence in Kerry, Irish Manufacturing Research in Westmeath and ThreeD (design develop disseminate) Waterford.

eHubs and entrepreneurial space supported include Monaghan County Enterprise Fund, Leitrim County Enterprise Fund, Donegal Digital Innovation, Bia Innovator Campus in Galway, RDI Hub Kerry, Cork Urban Enterprises, Sneem Innovation and Technology Services Kerry, Mol Teic Kerry, County Kildare Community Network in Kildare, Dublin Enterprise and Technology Centre Dublin, Ghala Dublin and the Social and Local Enterprise Alliance Dublin.

IDA Property Solutions, Strategic Sites and Grants

IDA Ireland's Regional Property Programme (RPP) was announced in 2015 and aims to deliver €150m investment in regional property solutions by 2019. The RPP is targeted at ensuring the ready availability of an adequate supply of marketable serviced land, office and industrial/manufacturing buildings in advance of demand, by both existing and potential client companies. It is an important tool through which investors can be encouraged to locate in areas outside of Dublin.

The RPP includes the construction of nine new advance facilities around the country and the agency continues to roll out its building programme across the country with new buildings planned in Carlow, Dundalk, Limerick, Galway, Athlone and Waterford over the next two years. DBEI is confident that the RPP, which has already helped generate employment in the regions, will help secure further investment in the years ahead.

In line with the objectives of Project Ireland 2040, following the completion of the first phase of the RPP in 2019, the agency intends to further invest in regional property and strategic site acquisition to ensure more utility intensive investments of scale are secured for Ireland and particularly for the regions.

Investment in Advanced Manufacturing

The Irish manufacturing sector is key to Ireland's continued economic success. The sector, however, is facing significant changes and challenges in the coming years. Driven by rapid technological development, manufacturers are having to work smarter, operate more efficiently and continually innovate. Manufacturers therefore need efficient research and development (R&D) processes that will enable them to reduce engineering time and costs, producing new designs quickly enough to ensure they remain competitive.

Supporting research, development and innovation is therefore critical in both creating new manufacturing opportunities and in developing new tools, such as robotics; 3D printing and the digitisation of manufacturing processes.

Significant national investments are already being made in terms of R&D supports for advanced manufacturing. These include the Science Foundation Ireland (SFI) funded CONFIRM Research Centre focusing on smart manufacturing and I-FORM Research Centre addressing additive manufacturing (3D printing) research and development needs.

Through EI, investments have also been made principally through the Irish Manufacturing Research (IMR) Technology Centre. IMR is already helping firms identify, adopt and adapt new manufacturing technologies and solutions for their businesses as well as providing training to Irish based companies.

Other research centres, technology centres and other third level groups are also supported to deliver research and technology solutions for the manufacturing sector. Over the course of the plan an integrated national advanced manufacturing R&D support system will be developed ensuring a coordinated expansion of advanced manufacturing supports linking centres and capacity across all regions.

A National Design Centre

A National Design Centre will be established as an incubation, training and demonstration capacity in the regions to support market-led innovation in Irish-based enterprises to grow international sales.

Design thinking – using design methodologies to solve problems – has become an integral part of the modern business innovation model. Design-based innovation is often the critical interface between scientific and technological advances and a positive customer experience.

A National Design Centre will be the focal point to encourage:

- Irish people to understand and appreciate the contribution that design makes to economic and societal development;
- Young Irish people to develop design-based skills and to demonstrate the opportunities for design talent;
- Entities in the public and private sectors in Ireland, to adopt design thinking, and to develop design-led innovation, so as to provide better products and services for their customers.

In so doing, the National Design Centre will enhance Ireland's reputation as a modern innovation-led economy and society and a source of internationally-renowned design talent.

The National Design Centre will develop activities which will:

- Promote the economic, societal and cultural value of design.
- Promote of the benefits of Design-Thinking.
- Demonstrate best practice in world-class design.
- Promote design education, skills development and career opportunities.
- Promote design research.
- Provide networking, advice and incubation facilities to support market-led design innovation in Irish enterprise.
- Foster the delivery of design training, programmes and masterclasses for enterprise.
- Demonstrate design as a disruptive application in the digital age, shaping the markets, the products and the services of tomorrow.
- Building on Ireland's rich heritage in creativity, position Ireland as an internationally-recognised centre of excellence for design capability.

In delivering these activities the National Design Centre will be networked with other design institutions and activities nationally and regionally, and with international design promotion organisation.

Through the activities of the National Design Centre, Ireland will have:

- A stronger international reputation a source of design talent and creativity;
- More design-led talent and innovation talent leading to a more internationally resilient enterprise sector and high value employment opportunities; and
- Better public services through the application of design principles.

Investment in World-class Research and Technology Centres

Market-focused research and technology centres play a vital part in public support for enhancing the competitiveness of enterprise through innovation and the commercialisation of research. These centres provide a mechanism through which enterprise can access expertise and technology beyond what they have available in-house to enhance their products and services.

The Science Foundation Ireland (SFI) Research Centres programme links scientists and engineers in partnerships across academia and industry to address crucial research questions. Co-funded by industry the centres drive collaboration between academia and firms, bringing together world-class researchers across Ireland to work on large scale strategic research programmes. A new SFI Research Centre, to be co-funded by the Department of Agriculture, Food and the Marine (DAFM), will be announced later in 2018. This new centre, led by Teagasc in partnership with the Tyndall National Institute and other universities and institutes of technology throughout the country, will support our national dairy sector by being a world leader in research for precision pasture-based dairying.

The Enterprise Ireland/IDA Ireland Technology Centre programme complements the SFI research Centres programme and supports industry-led research, development and innovation. The Technology Centres focus on identifying new sources of industrial growth and job creation and achieving competitive advantage for industry by accessing and leveraging the innovative capacity of the Irish research community. The Technology Centre Programme also enables the transfer to industry of around 20 highly skilled and industry oriented researchers every year. In 2017 almost 800 companies engaged with the Technology Centres programme across Ireland.

Over the course of the plan further strategic capital investments will be made to increase the number and strengthen the network of research and technology centres to provide world-leading R&D capacity in strategically important areas for the economy.



Finance for Growth

Market failures in the supply of financing and working capital for enterprise will be responded to through a range of innovative measures including EI's direct equity investments and Seed and Venture Funds. Schemes will be designed which have been informed by stakeholder engagement to improve access to finance for SMEs.

The €300 million Brexit Loan Scheme, which was launched in March 2018, provides low cost finance at reasonable terms and conditions to Brexit exposed SMEs. A second scheme, designed to increase the availability of affordable longer-term financing for SMEs (a potential investment loan scheme) is currently being developed. This adds to State supports already in place to increase availability of financing for an innovative business model (the Credit Guarantee Scheme) and availability of microfinance.

A new round of funding for the Seed and Venture Capital Scheme will support technology start-ups and early stage companies with high growth potential across the regions.



Research, Development and Innovation

To remain competitive, Ireland needs to focus on what will be required to maintain our economy both today and in the future. Research, development, innovation as well as a highly educated and skilled workforce will be key points of differentiation for Ireland and key drivers of our future economic success.

Innovation 2020 outlines a clear plan to transition Ireland from an innovation follower to a global innovation leader. A global innovation leader has:

- Excellent research performed in strategically important areas with relevance and impact for the economy and society.

- A strong, innovative and internationally competitive enterprise base, growing employment, sales and exports.
- A renowned pool of talent in the public research system and in industry, which maximises exchange of talent and knowledge between the two.
- A coherent, joined-up innovation ecosystem, responsive to emerging opportunities, delivering enhanced impact through the creation and application of knowledge.
- An internationally competitive research system.

Over the course of the *National Development Plan* investment in research, development and innovation will be accelerated in support of *Innovation 2020* and beyond, through the actions set out in this document.

Investment in Research Training

The skills and labour market is evolving more quickly than ever, particularly with the emergence of disruptive technologies such as artificial intelligence, machine learning and the Internet of Things. In response to this evolution, the specific occupations, skills and qualifications that are required also continue to change over time. Interdisciplinary approaches, including between STEM and non-STEM subject areas, will be important in building research teams both in the public and private sectors.

Since its launch in 1998, the Programme for Research in Third-Level Institutions (PRTLII) over five cycles of expenditure, has enabled significant investment in human capital development, through Structured PhD/Emergent Technology programmes across Ireland's higher education institutes (HEIs) as well as the provision of top-class research infrastructure (buildings, laboratories and cutting-edge research equipment).

The *National Development Plan* identifies further investment in researcher training and research infrastructure as an investment priority and, in 2019, we will see the establishment by SFI of dedicated Centres for Research Training (CRTs) providing sustainable programmes of research and training for cohorts of research masters and PhD students. The cohort-based programme will deliver a world-class, student-focused postgraduate experience which will contribute to the goal of positioning Ireland as a leader in postgraduate researcher training and education. This will address in a significant way the requirement for increased investment in research training enrolments.

Significant additional investment in higher education infrastructure is also envisaged addressing both education and research activities in the higher education institutions. Over the course of the plan, and as funding becomes available, further investment decisions will be taken in terms of a successor to the PRTLII to include research equipment and other research infrastructure needs.

Investment in International Scientific Collaboration

For Ireland to become a Global Innovation Leader, our research and innovation system must be open with strong international collaboration links. Membership of leading international research organisations (IROs) is an important mechanism for facilitating this engagement.

Ireland is currently a member of a number of IROs including the European Space Agency, the European Molecular Biology Laboratory, the European Molecular Biology Conference, EUREKA, COST, ELIXIR and CECAM. In 2017 Ireland joined the International LOFAR Radio Telescope network.

The *National Development Plan* recognises the importance of further international research engagement including investment in membership of international scientific organisations such as the European Southern Observatory (ESO) and an appraisal of membership of CERN.

A capital allocation has been made to enable Ireland join ESO, effective from October 2018. Ireland's membership ESO has been prioritised because of the large, established community of astronomy researchers in Ireland. Given that astronomy is an active area of research in each of our universities and several of our institutes of technology, this community is well positioned to avail of the opportunities provided by ESO membership, thereby maximising the immediate benefit to Ireland. These opportunities will include participation in pioneering frontier research, access to cutting-edge technology, commercial opportunities for enterprise, and the creation of human capital and skills in Ireland.

Over the term of the plan and as funding becomes available the Government will decide on Ireland's membership of other international research organisations including that of CERN.



Investment in the Tyndall National Institute

The Tyndall National Institute in Cork is Ireland's largest dedicated research centre, specialising in information and communications technology (ICT) hardware and systems. It currently hosts 460 highly qualified scientists, engineers, postgraduates and support professionals and provides training for 130 PhD and research masters students.

Tyndall is a stand-alone National Institute established and governed by an agreement with University College Cork (UCC).

In 2018, Tyndall will leverage its core grant of €4.5 million to generate a research budget of approximately €39 million, including €14 million from non-Exchequer sources (EU and industry).

The *National Development Plan* identifies the expansion of Tyndall to allow for significant increase of its size as an investment priority for Government. The expansion project will see significant investment made in physical infrastructure and research equipment. The aim is to grow Tyndall so that it becomes an international leader of scale in translational research playing a key role in the further development of ICT innovation in Ireland.

Investment in a National Space Technologies Programme

In recent years the global space sector has been undergoing a major change, with the global space market expanding from largely Government-driven projects to increased participation by private industry. Expansion, driven by several factors such as the increasing demand for communication services, location information and space-derived data, has opened up opportunities for industry, research centres and entrepreneurs to move into the space sector and develop technologies, products and services for space segment, end-user equipment and space-related services and applications.

To date, Irish industry has developed an expanding presence in this sector largely facilitated by Ireland's membership of the European Space Agency (ESA) as well as Ireland's participation in two EU flagship space programmes, Copernicus and Galileo.

Ireland strategically uses its investment in ESA to develop a strong and sustainable space industry in Ireland and to optimise and grow the economic return from this investment. Currently, Ireland has approximately sixty companies engaged with ESA developing space technology for products and services.

The *National Development Plan* provides for greater participation by Ireland in ESA programmes. Funding made available through the plan will enable an increase in our national budgetary contribution to the ESA programme offering the opportunity for the Irish space sector to drive its international competitiveness and reputation even further.

In response to the expanding role space can play for business, the public sector and citizens, the Department of Business, Enterprise and Innovation is currently developing a National Space Strategy for Enterprise to drive a sustainable and strong Irish space industry. The strategy is expected to be published late in 2018 and will provide a roadmap for future investment and support for the expanding space industry and related sectors. The strategy will also ensure that Irish industry is supported to act competitively and develop rapidly at an international level.



Investment in High Performance Computing

A robust national high-performance computing (HPC) infrastructure is a key element in the development of a world-class smart economy, from attracting foreign investment to Ireland to growing a highly skilled workforce.

Ireland has long recognised the importance of HPC and invests nationally through the Irish Centre for High-End Computing (ICHEC). Ireland's investment in skills and infrastructure has led ICHEC to become an internationally recognised centre of excellence for HPC and data management.

2018 will see the installation of a new national supercomputer in ICHEC to support research and innovation. The new supercomputer will be the first and only open access Petaflop-class HPC system

in Ireland and will provide Irish researchers with the HPC power to address some of the toughest challenges in science and society. Moreover, strengthening the abilities of ICHEC will facilitate the emergence of competencies in technologies such as artificial intelligence, machine learning and earth observation. These technologies are key to Irish industry and key to fostering new skills in the educational system.

The *National Development Plan* will enable Ireland to continue its investment in HPC progression both at a national and an EU level. This will include consideration of Ireland's membership of the EuroHPC project currently being drawn up. The project envisages Members States working together and with the European Commission in the context of a multi-government agreement to acquire and deploy, by 2022/2023, a pan-European integrated exascale supercomputing infrastructure.

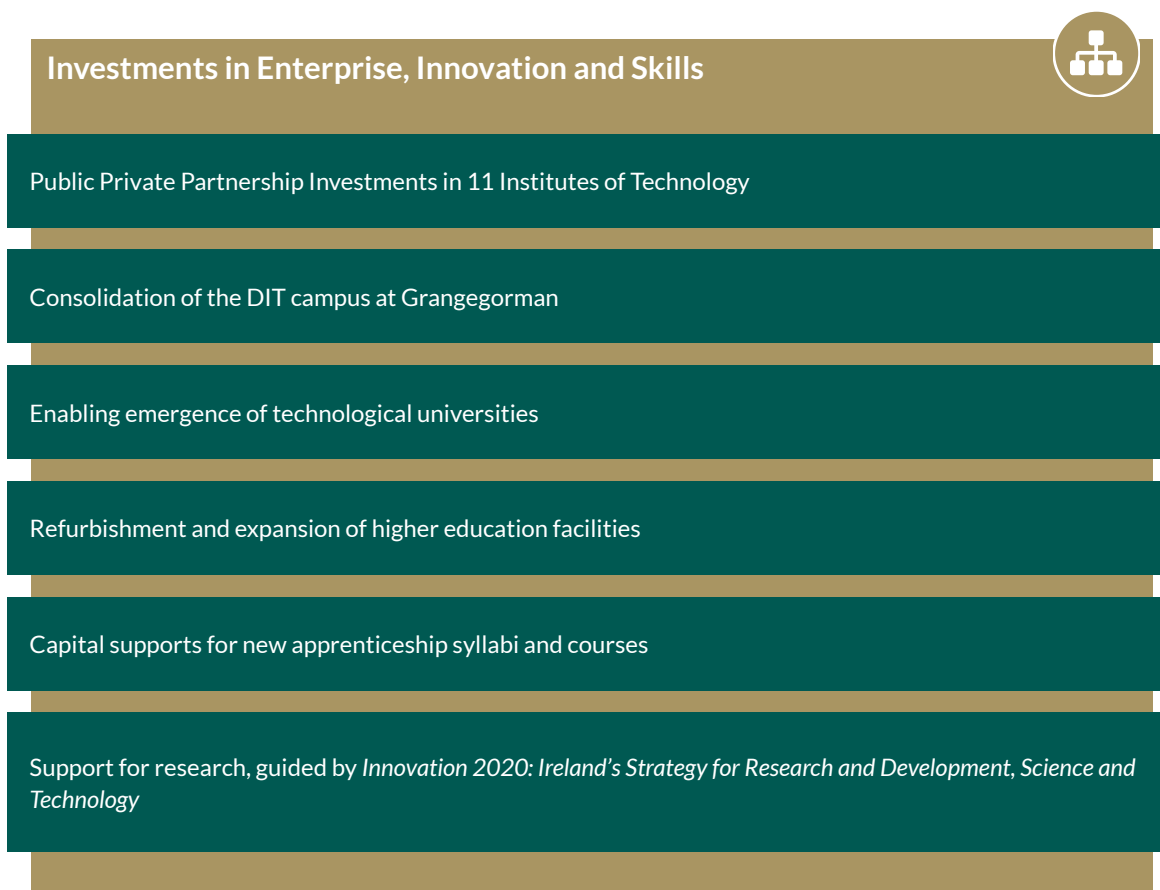
Higher Education and Further Education and Training (FET)

The initiatives outlined in the preceding sections above are all led by the Department of Business, Enterprise and Innovation (DBEI). These will be complemented by additional initiatives led by the Department of Education and Skills (DES) that will focus on investment in Higher Education and

Further Education and Training (FET) in each region. This will have a crucial role to play in terms of delivering the pipeline of skills and talent that sustains enterprise and innovation in a strong economy.

DES will produce a separate report at a later stage that will elaborate upon the details of the DES-led initiatives in the NDP (summarised in the illustration below) and which, together with the DBEI led initiatives outlined in this report, will ensure the successful delivery of National Strategic Outcome 5: A Strong Economy, supported by Enterprise, Innovation and Skills.

The illustration below summarises the key DES-led Strategic Investment Priorities identified in the National Development Plan 2018-27 to deliver National Strategic Outcome (NSO) 5: A Strong Economy, supported by Enterprise, Innovation and Skills.





Strengthened Rural Economies And Communities

As well as being the Department leading the delivery of National Strategic Outcome (NSO) 5 in the NDP, DBEI will also support the delivery of NSO 3: Strengthened Rural Economies and Communities, which is jointly led by the Department of Rural and Community (DRCD) and the Department of Agriculture, Food and the Marine (DAFM).

Summary of the Strategic Investment Priorities identified in the NDP to deliver NSO 3

As specified in the *National Development Plan* investment will be directed to a more equal balance of growth between Ireland's three regions – the Northern and Western; Southern; and Eastern and Midland (which includes Dublin). The objective is that all three regions should grow at broadly comparable rates as opposed to a continuation of the current long-term trend in which growth and opportunity in Dublin and the wider Eastern and Midland area far exceeds the rest of the country. 75% of future population growth will be outside Dublin across the regions and including rural areas.

A new Rural Regeneration and Development Fund of €1 billion will be established to invest in rural renewal to allow towns, villages and outlying rural areas to grow sustainably.

Fast, secure, high capacity and reliable digital connectivity is imperative, not just for economic competitiveness but also for sustainable living in all parts of the country. A key short-term action, therefore, will be delivery of the National Broadband Strategy ensuring coverage in villages, rural areas and islands.

Other investment priorities include regional and local roads, tourism development, greenways, agriculture, fisheries and forestry, and the Gaeltacht and the Islands.

A number of Strategic Investment Priorities are identified in the *National Development Plan* to deliver NSO 3: Strengthened Rural Economies and Communities. High level details of these Strategic Investment Priorities to deliver NSO 3 are outlined in the NDP as well as associated indicative resource allocations over the period 2018-2027 (details in the table below):

€ billion	Exchequer	Non-Exchequer	Allocation
3. Strengthened Rural Economies and Communities (Lead Departments: DRCD, DAFM. Related Departments: DBEI, DTTAS, DCHG, DCCAE)			8.8
of which: Regional and Local Roads	4.5		
Rural Regeneration and Development Fund	1.0		
National Broadband Plan	Confidential		
Agriculture	0.8		
Tourism	0.3		
State Owned Enterprises (for example, Coillte, Bord na Móna)		0.8	

DBEI Support for Delivery of NSO 3

Enterprise has an important role to play in the revitalisation and strengthening of the rural economy. The measures contained in the NDP under NSO 3 will address some key barriers to enterprise development and growth in areas more physically remote from larger towns and cities. In particular, today's businesses are highly reliant on the digital infrastructures that enable them to connect with their customers domestically and internationally. The same ability to connect will open up opportunities for enterprises to tap into a wider pool of talent and create flexible employment opportunities for rural inhabitants through e-working and remote working.

Physical connectivity remains vitally important for business, especially in the tourism and leisure sector, and better-quality road infrastructure will make rural areas and communities more attractive places to visit and spend time in. Better quality road infrastructure will facilitate easier access essential services and to the workplace for rural inhabitants, helping to sustain rural populations and a talent pool for local businesses.

The collaborative mechanisms established through the Regional Action Plan for Jobs process will assist in targeting investment to best effect and allow good practice models to be replicated throughout the regions. The process of refreshing and refocusing the Regional Action Plans for Jobs through to 2020 is being undertaken in parallel with the formulation of the three Regional Spatial and Economic Strategies (RSES) by the Regional Assemblies. DBEI will continue to work closely with the Regional Assemblies to



ensure complementarity and alignment between the RAPJs and the RSEs.

DBEI agencies have a key role in supporting jobs in regional and rural areas which in turn support other jobs in sub supply and services businesses locally.

IDA Ireland's current Regional Property Programme of €150m will be built upon to deliver enterprise property solutions across the regions. IDA Ireland will continue to target a minimum increase of foreign direct investment of 30% to 40% in each region outside of Dublin.

Enterprise Ireland clients support almost 210,000 jobs directly, two thirds of which are outside of the Dublin region. Through spending of €25bn in the domestic economy, those companies indirectly support a further 100,000+ jobs throughout the country. Enterprise Ireland (EI) has a target to create 60,000 new jobs between 2017 and 2020.

The Local Enterprise Offices (LEOs) have the responsibility to drive entrepreneurship and the growth of the microenterprise sector at local level. The LEOs have some 6,000 clients across their 31 offices, employing more than 30,000 people, and over 80% of which are outside Dublin.

To support collaboration among agencies and others at local level, formal memorandums of understanding (MoUs) are in place between the enterprise support bodies including the LEOs, LEADER/Local Action Groups, Údarás, Enterprise Ireland etc. that will ensure that resources are utilised in the most efficient manner, supporting entrepreneurs and enterprises in every part of the country to sustain and grow quality employment and sustained improved in living standards for all over the coming decades.





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