Science Foundation Ireland sfi For what's next

Shaping Our Future

Delivering Today Preparing for Tomorrow

Science Foundation Ireland Strategy 2025

Rialtas na hÉireann
Government of Ireland

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Foreword from Minister Simon Harris

As Ireland's first ever Minister for Further and Higher Education, Research, Innovation and Science, I am delighted to formally launch Science Foundation Ireland's new Strategy: ***Shaping Our Future*.**

Over the last two decades, the Irish Government has aimed to build a strong sustainable economy and better society through a world class research and innovation system.

The formation of my new Department takes this goal to a new level.

In the relatively short time I have been in my role, I am excited by the talent and opportunity that the research and innovation sector represents.

I see my role and the role of my Department as an enabler of this opportunity, to see us become an Innovation Island. The implementation of SFI's strategy is a key step to achieving this ambition.

Shaping Our Future seeks to build upon the investment Government has made in the sector and support the objective to be an Innovation Leader in research and innovation as set out in Our Shared Future, the programme for Government.

SFI's new strategy focuses on *Delivering Today* while *Preparing for Tomorrow*.

Delivering Today enables the excellent research and top talent required to deliver tangible benefits to Ireland today. This is aligned to this Government's commitment to ensure all of Ireland's people benefit from public investment.

The strategy also commits to *Preparing for Tomorrow*: providing opportunities for everyone by fostering the talent and skills to prepare Ireland to take advantage of emerging technologies for our economy and society as well as ensuring a robust research ecosystem that is embedded in and delivering for our people.

As we look to build a fairer and more sustainable economy, *Shaping Our Future* supports the need to drive equality within the sector, to advance social cohesion and inclusion, and crucially, contributing to the public good and Ireland's major societal challenges.

I am pleased to see the emphasis within the strategy on a balanced portfolio of research, from early-stage researchers and frontiers research, attracting and supporting talent, to deepening partnerships with enterprise, increased collaboration at a national and international level, and further development of our SFI Research Centres.

This emphasis, and the investment to support it, will ensure that as a country we are in a position to anticipate what's next, to be ready to respond, from quantum technologies to the digitisation of public health services, for the advancement of our economy and all of Irish society.

As Higher Education also falls within my remit, I commend the importance the strategy places on investing in our talent and building competitive research to ensure we can compete both in Europe and internationally. For us to realise our ambitions in the near and long term, we must invest in people as well as the infrastructure required to enable their research and development.

From where we are today and where we have come from, the role research and innovation are playing to address the largest national and global issues has never been clearer. Whether it is COVID-19, the climate crisis or increasing digitisation, the Irish people are turning to science to deliver solutions in a way the sector has never seen before.

Shaping Our Future will enable, foster, and support the creation and development of many of these solutions.

I want to thank all of those across the research and innovation system who shared their views and participated in the creation of this strategy. I congratulate SFI for the outstanding work it has delivered to date and for developing an ambitious and forward-thinking strategy for the next five years.

I look forward to working with you and supporting you on this important journey.

Minister Simon Harris TD
Department of Further and Higher Education, Research, Innovation and Science

Foreword from Professor Peter Clinch

I am delighted to introduce Science Foundation Ireland's new Strategy: *Shaping Our Future*. This Strategy is an ambitious one. It has to be. Ireland's competitiveness, our levels of inward investment, the productivity of firms of all sizes, our wages and standards of living, our jobs and the jobs of our children, all depend upon Ireland being a productive economy. The economic evidence shows that the vast majority of economic growth is delivered by increases in productivity which, in turn, depends upon the innovation-intensity of the economy. Investment in research, both fundamental and applied, is a key determinant of the long-run success and prosperity of Ireland and its people. In order to secure Ireland's current economic prosperity and to protect its future, we must increase investment in research and development to match that of our competitors. And we must invest to develop the capacity to deal with anticipated and unanticipated societal challenges. Prior investment in our scientific capacity has shown its value in so many areas and this is particularly evident from the contribution of our researchers to addressing the challenges of COVID-19.

In developing this Strategy, SFI recognises the need to fund both fundamental and applied research. We see the need to support the work of early-stage researchers, established individuals and larger research collectives. We set out the importance of working with enterprise and the public sector, and collaborating across borders. We recognise the need to engage collaboratively with researchers and our Higher Education Institutions and to work together across Government Departments, funding agencies and enterprise agencies. We have reflected the need to increase public engagement with science and to support a pipeline of talent from school students to world-leading Research Professors. This is what SFI must do to secure a core building block for Ireland's future.

Our vision is that Ireland will be a Global Innovation Leader in scientific and engineering research for the advancement of Ireland's economy and society. By **Delivering Today** while **Preparing for Tomorrow**, SFI's new strategy is designed to meet current challenges and to position Ireland to take advantage of future opportunities. In doing so, it will support the priorities outlined in Ireland's Programme for Government *Our Shared Future*, and the objectives of the national recovery plan. We commit to working with the newly established Department of Further and Higher Education, Research, Innovation and Science, across other Departments and agencies, with researchers and their institutions, and with non-STEM disciplines, to foster a cohesive research and innovation ecosystem that will support Ireland's competitiveness and a rapid recovery from the COVID-19 crisis and support the adaptation to Brexit. We will support researchers who will help to ensure Ireland's resilience to climate change, future pandemics and other challenges that arise in the future.

With the formal establishment of SFI in 2003, Irish policymakers demonstrated great foresight and ambition by understanding that investment in research would be a pre-requisite for a high-performing Irish economy and a vibrant society. While their foresight was admirable, they could hardly have conceived of how important it would also prove to be for solving some of Ireland and the world's greatest societal challenges. Irish research, and researchers, are at the forefront of the battle against COVID-19. The importance of this expertise is a compelling case for further investment in research. We know of some of the great economic opportunities that will present themselves, and we know of many of our greatest challenges: climate change, pandemics, ageing and health, AI and robotics, and the future of jobs. If previous policymakers had the foresight to invest in research for Ireland's economic benefit, current policymakers must similarly invest for a prosperous future.

Professor Peter Clinch
Chairman of the Board
Science Foundation Ireland

Foreword from Professor Mark Ferguson

From the mechanisation of agriculture to the invention of television, from vaccines to the internet, from mobile phones to electric cars, the positive contribution that science, research, and innovation makes to people's lives globally is unquestionable. We have significantly increased our understanding of ourselves, each other, the planet and our universe through a combination of curiosity and application. Discovery, invention and innovation fuel great progress. Many mysteries remain unsolved and enormous opportunities lie ahead, fuelled by the ever-increasing pace of discovery and innovation. Indeed, with the many new tools now available – super-computing, genetic technologies, artificial intelligence, advanced imaging, fast communications - a golden age of discovery, invention and innovation lies before us. There has never been a more exciting time to be alive in science. Such advances have the potential to positively transform societies and to bring economic prosperity to those who make and embrace them. Witness the enormous contribution science, research and innovation have brought to managing the COVID-19 crisis – effective new vaccines delivered in less than one year – something previously thought impossible in less than ten years. Our world is not going to become any less technological.

For these reasons, many countries around the world are increasing their investment in Research, Development and Innovation (RD&I)[1,2] – South Korea 4.5% of GDP, Japan 3.3% of GDP, US 2.8% of GDP, China 2.2% of GDP (2018 figures). The RD&I expenditure of the EU in 2018 stood at 2.2% of GDP but with a target to invest 3% of GDP[1]. Projections are that 11 countries – Austria, Belgium, Denmark, Germany, Hungary, Israel, Italy, The Netherlands, Poland, Slovakia, Sweden – are at, or will, achieve that investment target by 2027[1]. The UK Government has committed to increase UK investment in R&D to 2.4% of GDP by 2027 and to increase public funding for R&D to £22 billion per year by 2024/25[2]. Over the period 2010 – 2019 Ireland's investment in RD&I, as a percentage of GDP, GNI or GNI* declined[1] (and in 2019 was just below 1% of GDP)[3] – largely due to a flat investment budget and growing GDP, GNI or GNI*.

Public investment in RD&I is essential to catalyse and crowd-in business investment in RD&I – in Ireland, both need to grow. Indeed, the EU commented[1] "For the more advanced member states (like Ireland), under-investment in the public science base may jeopardise their capacity to be at the technological frontier and generate the knowledge and skills needed to fully reap the benefits of the digital and green transitions".

However, during the timeframe from 2012 - 2020, SFI focused (under its previous strategy, Agenda 2020) on increasing the effectiveness and efficiency of the Irish RD&I system. This was successful, with Eurostats citing Ireland as the most R&D efficient country in Europe, generating more innovation output per euro of public funds invested than any other country. This is also evidenced by: the Irish research success in Horizon 2020 (for the first time Ireland has won more competitive funding [>€1.25bn] than its contribution to the Horizon budget); the scale of industry engagement and co-funding through the SFI Research Centres and Partnership awards; the scale of Higher Education Institution (HEI) collaboration through the SFI Research Centres and Centres for Research Training; the scale of international collaboration through partnerships with the National Science Foundation (NSF), National Institutes of Health (NIH), UK Research and Innovation (UKRI), Royal Society, Wellcome Trust, Fraunhofer and National Natural Science Foundation of China (NSFC); our ability to attract outstanding researchers through the SFI Research Professorship and Future Research Leaders programmes and our ability to support indigenous talent through the SFI Frontiers for the Future and Starting Investigator Research Grants.

But there are limits to efficiency gains and the system now needs, and is prepared for, increased investment as evidenced by the increasing reserve lists of excellent and impactful proposals under all of the above programmes, which have been deemed fundable by international peer review, but for which SFI had insufficient budget. Failure to invest more now will disadvantage Ireland as other countries increase their investment, outcompete us to create and attract more knowledge, innovative products and services, jobs and talent. This new SFI strategy is tuneable and allows programmes to be launched in line with the available budget. A good outcome would be a 15% budget increase compounded year on year over the five years of the strategy.

1 Borunsky L et al 2020, Aiming for more: Research and Development investment scenarios for the next decade, European Commission R&I paper series 2020/06

2 H.M. Government UK Research and Development Roadmap, July 2020

3 Eurostat 2019 R&D Expenditure Data

This new strategy builds on several important principles:

Science for Everyone

This includes creating a diverse scientific, research and innovation workforce which is welcoming to all. It extends to active engagement and co-creation with the Irish public. It will be inspirational for future generations and it will provide excellent opportunities to recruit and support outstanding researchers at all stages of their careers in both academia and industry.

Science for the Economy

Economic development, job creation and national prosperity are, and will be, highly dependent on a strong RD&I base with a regular output of new discoveries and inventions, innovative products and services, and a pipeline of highly educated and trained people. The combination of starting and scaling new indigenous high-tech businesses together with attracting and retaining foreign companies are both required for our future prosperity and are both dependent on a well-functioning and well-funded RD&I ecosystem. The World Economic Forum has reported4 that 'building the markets of tomorrow to achieve such economic transformation requires a creative combination of breakthrough technological and socio-institutional innovation'. This strategy provides that combination.

Science for Society

By addressing important problems in responsible ways, this SFI strategy aims to catalyse economic transformation that can provide sustainable economic growth whilst improving our climate and environment, and meeting the needs of society. Ireland should contribute to the solution of major societal challenges such as climate change, sustainability, pandemic preparedness, responsible use of data and AI. We will focus on national priorities within these grand challenges, e.g. reducing agricultural methane emissions, fostering biodiversity, enhancing cybersecurity – often on an all-island basis. We will continue to build strategic international collaborative partnerships with Europe, the UK, USA, China etc. We will foster the uptake of technologies and evidence by the public for better policy and delivery of services.

What's Next

Anticipating what new scientific and technological advances could be important in the future will provide not only early mover advantages for Ireland's RD&I community in both academia and industry but will also help to ensure that there is a stream of appropriately qualified talent available for future enterprises. Near term advances in fields like Quantum Technology, Artificial Intelligence, Green Technologies, Synthetic Biology, Neuroscience, will be supplemented with state of the art predictive intelligence, mining enormous databases of scientific publications, patents, citations etc. to anticipate and prepare for what's next.

Cohesive Ecosystem

RD&I systems are complex ecosystems across Government, academia, businesses, charities, national and international funders, investors, national and international collaborators and competitors. They depend on talented teams of people working in a supportive, diverse and inclusive culture across multiple disciplines with access to the right infrastructure, funding, data and connections both nationally and internationally. Although modern communication technology should enable this to occur anywhere, in reality these activities cluster together in defined regions, usually located around a research intensive university and associated deep tech companies both large and small – giving rise to the 'Brainbelts'5. As Professor Ed Glaeser from Harvard summarised 'We are a social species that gets smarter by being around other smart people.'5 Using data analytics these ecosystems can be visualised to see existing links and recommend links that don't exist but should, to optimise the collective intelligence of the ecosystem5. Flows of knowledge, IP and innovation between academia, industry and Government are complex, multi-directional and iterate with time – a far cry from the traditional linear tech transfer model – but publicly funded researchers in HEIs play a central role as the custodians and facilitators of this collective intelligence5. The new Department of Further and Higher Education, Research, Innovation and Science signals not only an important intent to foster and promote these activities, but also to bring more cohesion and collective intelligence to the Irish ecosystem – something SFI strongly supports and intends to implement. The difference between a strategy and reality is execution. Working with the new Department, and all our partners, SFI intends to execute this strategy so that Ireland can become a green, sustainable, deep tech, European Brainbelt.

Professor Mark Ferguson
Director General Science Foundation Ireland
Chief Scientific Adviser to the Government of Ireland

4 World Economic Forum Markets of Tomorrow: Pathways to a new Economy Insight Report, October 2020
5 Mulgan G, 2019 Innovation Districts: How cities speed up the circulation of ideas, Nesta blog, 5 November 2019

Executive Summary

Delivering Today, Preparing for Tomorrow

Vision: Ireland will be a Global Innovation Leader in scientific and engineering research for the advancement of Ireland's economy and society.

Mission: Science Foundation Ireland funds excellent and impactful research and talent, and shapes the future of Ireland through anticipating what's next and widening engagement and collaboration.

Today, more than ever before, we see the exceptional impact of Ireland's research and innovation system. We see it in the expertise we have developed, nationally and regionally, to contribute solutions to Ireland and the world's greatest challenges. We see how crucial the research investment has been to enable the partnership response to COVID-19. The research base, and the home-grown expertise at our disposal, has been at the forefront of Ireland's crisis response to the pandemic. This ingenuity and creativity are being called upon to deal with a myriad of challenges we face such as climate change, future pandemics, Brexit and the economic recovery from COVID-19. A strong research base is essential to enable us to understand, plan, adapt and deal with these challenges and protect the societal and economic advances for which we have collectively worked so hard. We see investment in talent and innovation leading to inward investment and the creation of high-quality jobs in SMEs and multinationals.

Science Foundation Ireland has played a key role in building Ireland's research and innovation capability by funding excellent and impactful research and fostering collaboration nationally and internationally. The advent of the new Department for Further and Higher Education, Research, Innovation and Science, sets the tone for a new era in Irish research and innovation. There is a clear mandate and a unique opportunity to shape a cohesive and vibrant research ecosystem with a common purpose and vision. We will continue to work collaboratively to capitalise on new opportunities to provide the foundations for an innovation-intensive economy, and to ensure Ireland's future resilience and capacity to handle crises is enhanced. In the days, months and years ahead, Science Foundation Ireland, and the people we fund, have a critical role to play in insulating Ireland's economy and society against future shocks. Moreover, SFI-funded research will shape the future of Ireland's society, deliver on citizens' priorities, allow us to take advantage of economic opportunities, and provide an essential building block for a competitive and prosperous economy to benefit Ireland and its people.

Science Foundation Ireland's new strategy has two core ambitions: **Delivering Today** and **Preparing for Tomorrow:**

Delivering Today

To deliver on our vision for Ireland we will develop more top talent, build on Ireland's excellent research base, and maximise the tangible benefits for our economy and society, addressing current challenges and supporting quality jobs and a competitive economy.

Preparing for Tomorrow

As a small country, Ireland can best compete by developing a cohesive research ecosystem capable of taking first mover advantage in new and emergent fields. SFI's new strategy emphasises anticipating what's next and adapting our approach to lead in these new areas of discovery. To achieve this, SFI will engage and collaborate more widely and deeply with all stakeholders.

Science Foundation Ireland's new strategy, *Shaping Our Future*, has been developed to meet current challenges, seize future opportunities and support the priorities outlined in Ireland's recent Programme for Government: *Our Shared Future*. We will work with the newly established Department of Further and Higher Education, Research, Innovation and Science, and across other Departments and agencies, to foster a cohesive research and innovation ecosystem that will support Ireland's competitiveness and societal needs, including a rapid recovery from the COVID-19 crisis. We will support the researchers and innovators who will ensure Ireland's resilience to climate change, future pandemics and other challenges that arise in the future.

Our vision is that Ireland will be a Global Innovation Leader in scientific and engineering research for the advancement of Ireland's economy and society. This strategy is about increasing the competitiveness of local enterprise (particularly SMEs), attracting and retaining Foreign Direct Investment and global talent, building equality, diversity and inclusion in the research community, and supporting the frontiers research and researchers that will futureproof Ireland's knowledge economy. In the longer term, with ongoing and increased investment in research and innovation and by leveraging our international presence to showcase Irish research and talent to the world, this strategy will continue to deliver benefits for the people of Ireland, high-value jobs for the next generation, and Irish and global solutions to achieve the United Nations Sustainable Development Goals, such as climate action, health and sustainable economic development.

The delivery of this strategy is built around **six themes**, each with its own set of actions:

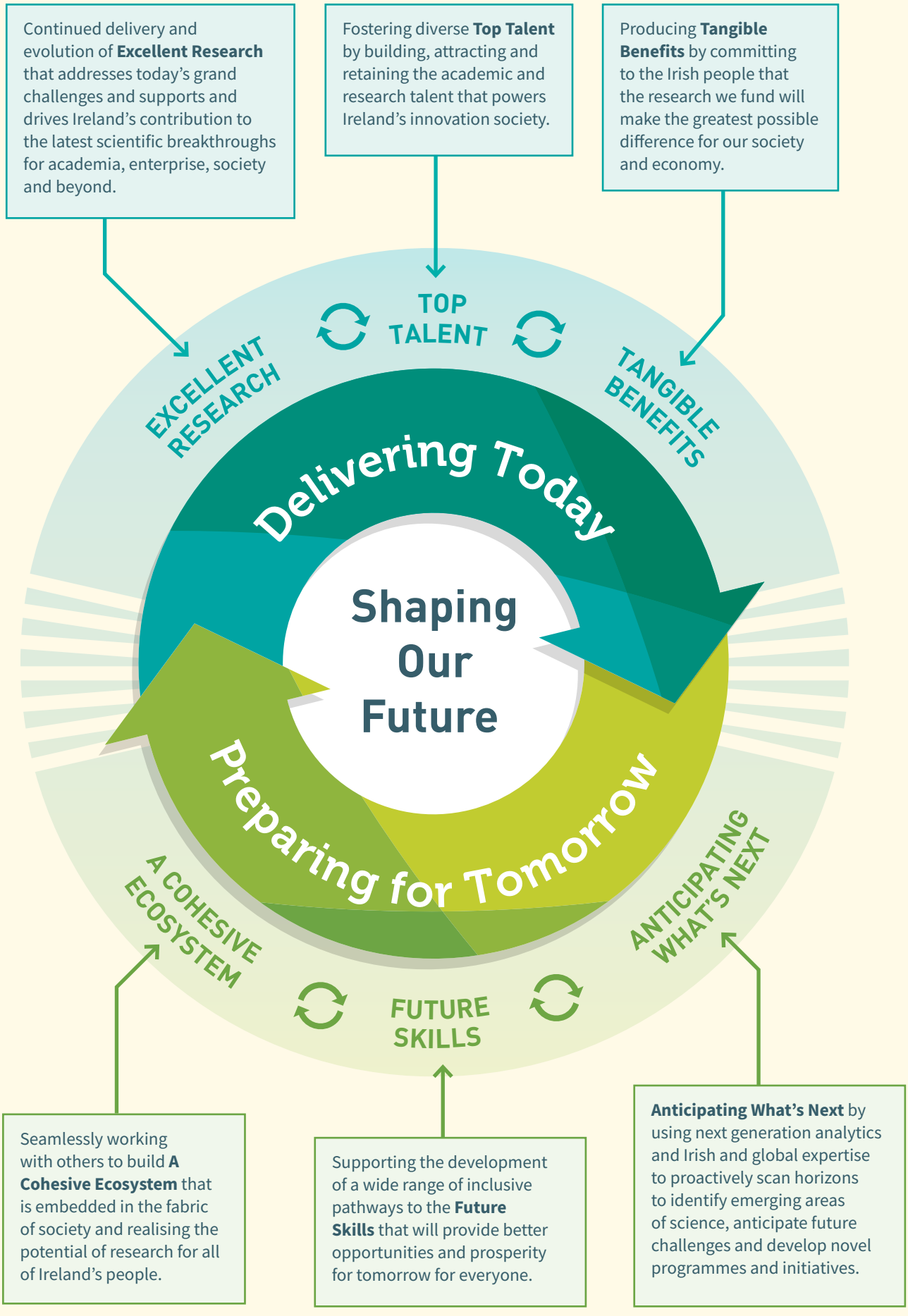
Shaping Our Future

Delivering Today

- Excellent Research
- Top Talent
- Tangible Benefits

Preparing for Tomorrow

- A Cohesive Ecosystem
- Future Skills
- Anticipating What's Next


Continued delivery and evolution of **Excellent Research** that addresses today's grand challenges and supports and drives Ireland's contribution to the latest scientific breakthroughs for academia, enterprise, society and beyond.
Fostering diverse **Top Talent** by building, attracting and retaining the academic and research talent that powers Ireland's innovation society.
Producing **Tangible Benefits** by committing to the Irish people that the research we fund will make the greatest possible difference for our society and economy.
EXCELLENT RESEARCH
TOP TALENT
TANGIBLE BENEFITS
Delivering Today
Shaping Our Future
Preparing for Tomorrow
A COHESIVE ECOSYSTEM
FUTURE SKILLS
ANTICIPATING WHAT'S NEXT
Seamlessly working with others to build **A Cohesive Ecosystem** that is embedded in the fabric of society and realising the potential of research for all of Ireland's people.
Supporting the development of a wide range of inclusive pathways to the **Future Skills** that will provide better opportunities and prosperity for tomorrow for everyone.
Anticipating What's Next by using next generation analytics and Irish and global expertise to proactively scan horizons to identify emerging areas of science, anticipate future challenges and develop novel programmes and initiatives.

In developing this strategy we have aligned carefully with national ambition as laid out in key Government strategies such as the recent Programme for Government *Our Shared Future, Project Ireland 2040, Future Jobs Ireland*, and *Innovation 2020*. These strategies outline an intention to significantly grow investment in RD&I, to futureproof our society and economy through knowledge and research, and to create a prosperous future based on high value jobs and societal resilience.

Innovation 2020 in particular calls for an investment of 2.5% of GNP in RD&I. It is anticipated that the successor to this strategy will also commit to at least 2.5% investment. Indeed, this may need to be higher still if Ireland is to remain competitive with other advanced economies whose levels of investment range from 2.8% to 4%[6]. The European Commission's target is now 3%.

In developing the targets and actions outlined below we have assumed that Ireland will have achieved this level of RD&I investment by 2025 and that this investment, combined with funding for other initiatives such as a North-South academic corridor, would enable a doubling of SFI's budget by 2025. The research ecosystem has the capacity to harness this increased investment as evidenced by increasing reserve lists of fundable proposals and by SFI's ability to attract and nurture star talent.

SFI's new strategy is designed to support and enable Ireland's level of RD&I ambition. Depending on budgetary conditions, the deliverables may be adjusted up or down according to final budgetary allocations over the next five years.

Presuming Ireland will attain the anticipated level of RD&I investment by 2025, this new strategy will go much further than before to provide economic and societal benefits for the people of Ireland and to prepare for our common future. Amongst other initiatives we will be in a position to make over 140 awards annually in our individual-led research programmes; we will train the most highly sought-after PhDs in the world who will be the leaders, resilient workforce, and entrepreneurs of the future; and we will recruit 20 world-class researchers to Ireland annually. We will support the research community to win a larger share of competitive European funding, working closely with the European Union to influence the research agenda.

We will also create research and innovation hubs for Small and Medium Size Enterprises (SMEs), Multi-National Companies (MNCs), and academic engagement across the regions, attracting industrial co-investment at scale, and building a connected stakeholder engagement network across the research and innovation system. To achieve this, we will continue to work closely with DETE, EI and IDA.

Responding to the extensive stakeholder consultation which highlighted the need for frontiers research, SFI has already introduced the Frontiers for the Future Programme. In this strategy, SFI commits to growing its investment in frontiers research[7] and ensuring regular provision of funding opportunities for frontiers researchers. Based on the assumptions outlined above, the planned spend ratio in 2025 for non-industry to industry programmes is 64:36. Funding up to 140 individual-led awards per year will result in a steady state of up to 560 individual-led research grants in progress at any time, creating a globally competitive frontiers research capacity for Ireland.

SFI Research Centres generate an additional €2 in leveraged funding for every €1 invested by the Irish Government. If Ireland's RD&I investment levels are realised, we would increase annual investment in the Research Centres up to €120 million by 2025 thus creating an additional €360 million of research activity in Ireland every year. Over the course of this new strategy we will reimagine the next evolution of the Research Centre model by introducing all-island Research Centres; seeding new proto-centres; and merging existing centres, where warranted, into larger scale independent research institutions.

As the world continues to change around us at a rapid pace, other advanced economies continue to increase investment in research and innovation. To protect the gains we have made in recent years, to become a Global Innovation Leader, and to meet the challenges and opportunities tomorrow brings, Ireland must prioritise investment in research and innovation.

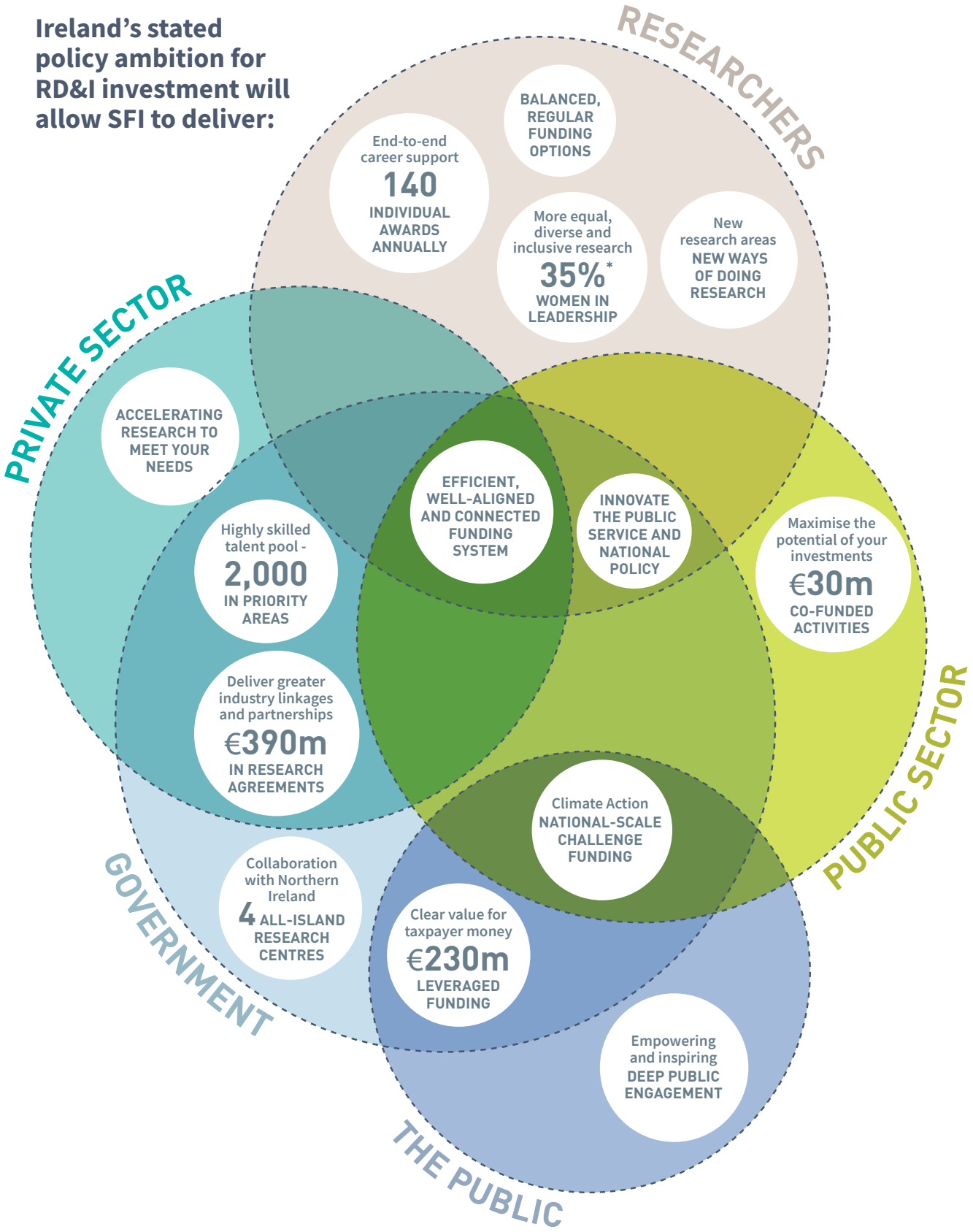
Shaping Our Future will, if funded in accordance with the current national ambition level set out in *Innovation 2020*, help to deliver on our national ambitions, futureproof our economy and allow us to make the most of future opportunities.

6 South Korea, Israel, Sweden, Switzerland, Japan, Germany, Denmark, Austria. Taken from The Research and Development Budget 2018-2019, DBEI

7 In this strategy, we do not distinguish between basic and applied research; early stage research often contains aspects of both. Instead, we refer to frontiers research which aims to produce a broad base of knowledge which may form the basis of the solution to current or future problems or opportunities.

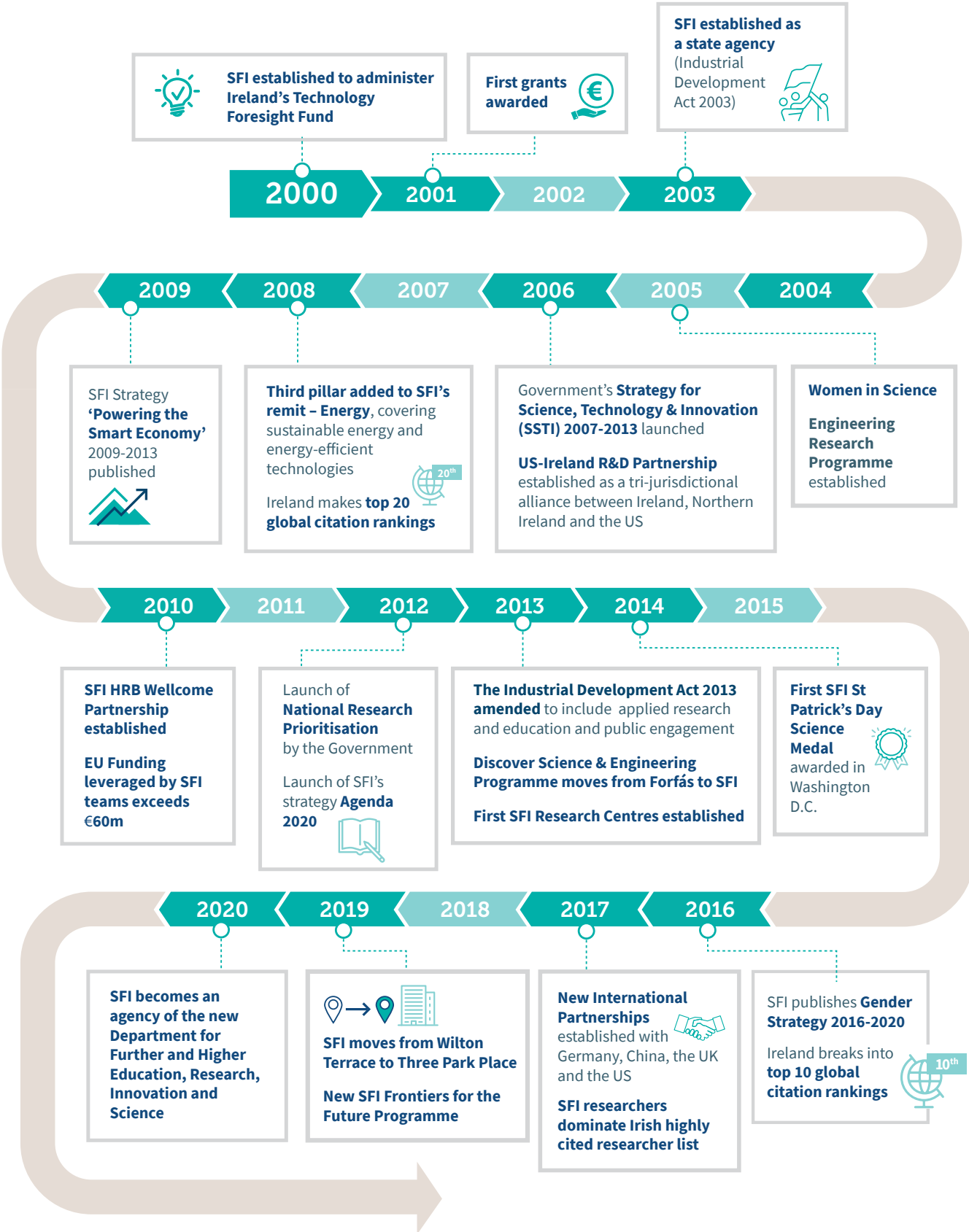
Benefits for our Stakeholders

Ireland's stated policy ambition for RD&I investment will allow SFI to deliver:



* 40% stretch target. Underlying metrics will track equality, diversity and inclusion

Milestones in SFI's History



Context

SFI's new strategy has been developed in the context of rapid and substantial technological, economic, social and political change and uncertainty in Ireland and globally. We are operating in a very different world today than we have been. We are faced with the unprecedented urgency of both living with, and recovering from, COVID-19, preparing for climate change implications, Brexit and several other strategic risks outlined in the National Risk Assessment[8].

These trends represent significant challenges for Ireland over the coming decade but could also present real opportunities. SFI has a key role to play in Ireland's response to these challenges and in grasping, as well as creating, the opportunities that may also present themselves.

Economic Recovery

The COVID-19 pandemic is unprecedented in the scale and severity of its impact, both in Ireland and overseas. Scientific research, and the innovation that sparks from it, will be the foundation for rebooting the Irish economy.

The talent and research SFI supports is an essential part of leading-edge teaching and training in our Higher Education Institutions. The scientific advances resulting from SFI funding lead to new products, new market-creating innovations and services, new companies and high-value jobs. SFI helps Ireland compete on a global scale by building our nation's reputation in research, producing highly-trained postgraduates in key areas in demand by enterprise and broader society (e.g. AI and data analytics). These are essential foundations for the attraction and growth of Foreign Direct Investment. Critically, the highly skilled graduates and the top talent from SFI-funded research in our HEIs, support innovation in local MNCs and SMEs thereby increasing their productivity, competitiveness and long-term growth.

Covid-19 and other pandemics

With the world still struggling with COVID-19, the future is uncertain in relation to how we predict, manage and prevent future global health crises. The Irish research community was key to Ireland's response to the COVID-19 pandemic. Past funding from SFI helped build this capacity and expertise in the national system. The foundational and discovery life sciences research that SFI funds leads to next generation diagnostics, therapeutics, vaccines and healthcare. We need to grow this capacity further, both to live with the virus and to better prepare for potential future pandemics and other threats.

As evidenced by the COVID-19 pandemic, delivering solutions at pace has been key to managing many of the challenges presented. Powered by SFI, research and innovation collaborations between Ireland's Higher Education Institutions, industry and the health sector can deliver rapid solutions to strategic risks and threats.

Climate Change

Mitigating and adapting to climate change are critical issues for mankind and Ireland can become a leader in developing climate action solutions. Climate change research is critical if we are to develop the technological and other solutions to reduce emissions and create just and sustainable jobs and opportunities for Irish people. The scientific breakthroughs we fund will have a direct impact on climate change actions such as: reducing industrial emissions through decarbonisation; reducing agricultural emissions through innovations in cattle diet and breeding; novel carbon capture, utilisation and storage technologies; producing and storing renewable energy; and sustainable waste management and new methods of food production.

These initiatives form key components of the Government's Green New Deal mission and will in turn produce tangible benefits for the people of Ireland including the creation of new jobs, better health and access to more affordable energy alternatives as well as decreasing the damage, e.g. flooding, that will result from climate change.

8 Government of Ireland National Risk Assessment 2019 – Overview of Strategic Risks https://assets.gov.ie/24144/fff14682a27943fbbdce8922124b5e05.pdf

Brexit

The United Kingdom's decision to leave the EU may create new opportunities for Ireland, both through strengthening ties with the UK and in increasing our role in Europe. Nevertheless, over the short-to-medium term, citizens and public and private sector organisations face important decisions and major challenges associated with Brexit. If the UK leaves the EU without a comprehensive trade deal in place, Ireland's economic recovery will be even more challenging.

In every scenario, through its activities under this new strategy, SFI will help address common problems and strengthen relations with Northern Ireland and Great Britain. We have several existing partnerships with UK Research and Innovation, the Wellcome Trust, and the Royal Society. We will expand and scale these partnerships, so that Irish researchers and companies can benefit from outstanding complementary expertise and facilities in the UK.

Regarding Northern Ireland, most recently SFI has partnered with the Department for the Economy (Northern Ireland) for Phase 2 of our COVID-19 Rapid Response Funding Call. We will greatly expand North-South research collaboration and have ambitious plans for all-island Research Centres and other research partnerships which will support the Programme for Government mission of *A Shared Island.*

Tomorrow's Opportunities

The pace of scientific, engineering, and technological endeavour and breakthroughs is accelerating. Over the next decade big data and analytics, the Internet of Things, blockchain and other technologies will mature and converge. Areas that will see significant advances could include connectivity, high throughput sequencing, additive manufacturing, nanotechnology, computer efficiency, quantum technology, artificial intelligence, machine learning, robotics and synthetic biology. We are also in an era where the traditional lines between fields of endeavour are blurring and research involving multiple disciplines is providing rich new avenues for exploration and innovation. Three simple phrases summarise the immensity of the opportunity: everything that can be measured will be sensored; everything that is sensored will be connected; and everything that is connected will be automated.

Ireland is a competitive, innovative country with ambitions to become a Global Innovation Leader. The new Programme for Government, *Our Shared Future*, aims for "research based in Ireland to be at the forefront of the next phase of disruptive technologies, leading rather than following the technological revolution while also being a centre for foundational research".

Ireland's future success and ambition to be a leader and first mover rather than follower rests on ensuring our readiness for this changing world and on the continued development of the knowledge economy. Ireland has demographic advantages here: its small size, young and educated population, its agility, and its strong networks between researchers, technology adopters, and policy makers.

SFI aims to grasp the opportunities offered by this rapidly changing landscape to identify niche areas to lead. Our future resilience and capacity to deal with future shocks will also depend on how well we develop and utilise our scientific and technological base. It is incumbent upon SFI and its partners to work together in these areas to achieve our ambition.

In this context SFI has a vital, proactive role to play in preparing Ireland "for what's next".

SDG 13 Climate Action: The United Nations states that *Climate Change is the defining issue of our time and we are at a defining moment.* The European Commission has identified *Adaptation to Climate Change, including Societal Transformation* as one of the five mission areas for the next wave of EU funding, Horizon Europe. Climate action is crucial to the new government's mission to achieve *A Green New Deal* for Ireland. SFI will play its part by funding technological innovations that enable societies to mitigate and adapt to climate change in the coming decade.

Delivering Today:
Excellent Research, Top Talent, and Tangible Benefits

It is widely accepted that *"innovation, and the diffusion of innovation, is one of the main drivers of productivity growth and job creation."*[9]. Ireland's societal and economic wellbeing requires excellent research and innovation to differentiate the country in an increasingly complex and competitive global market and to respond to the COVID-19 pandemic and climate change, rapidly and progressively.

Modern societies and economies recognise they cannot afford to stand still as they continually invest in research and innovation. Ireland currently has a very efficient, high-performance research and innovation system. However, the intensity of public funding of R&D in Ireland decreased from 0.60% of modified Gross National Income (GNI*) in 2012 to 0.40% of GNI* in 2017[10]. This is below the EU-28 average of 0.59% of Gross Domestic Product (GDP) and well below Global Innovation Leaders such as Denmark (0.89% of GDP) and Sweden (0.78% of GDP).

In addition, Ireland significantly under-performs on the European Innovation Scoreboard criteria of private co-funding of public research and development expenditure[11]. In a globally competitive environment, we, as a nation, must keep pace to preserve the gains we have made and to achieve our national goal to be an Innovation Leader.

For these reasons, **Delivering Today** is founded on three objectives: **Excellent Research, Top Talent** and **Tangible Benefits**. Achieving these objectives enables our country to build on our recent successes by further scaling up activity on SFI-funded *excellent research and top talent*, producing *tangible benefits* for Ireland's society and economy today. These three objectives are summarised below:

In **Excellent Research**, SFI supports and drives Ireland's contribution to the latest scientific breakthroughs which lead to innovation for academia, enterprise, the public sector, government, society and beyond. These breakthroughs will, for example, advance emissions, energy and other climate action initiatives, which form key components of the Government's *Green New Deal* mission. To support frontier research delivering these scientific breakthroughs, we will maintain a portfolio balanced between frontiers and applied research, and between Research Centres, individual-led research and our other schemes. **Excellent Research** also includes increasing North-South dialogue and supporting the Programme for Government mission of *A Shared Island* by supporting All Island Research Centres.

Through **Top Talent**, SFI builds, attracts and retains diverse academic and research talent that powers Ireland's innovation society. This talent, both home grown and imported, is the foundation of our Higher Education Institutions, attracts Foreign Direct Investment, supports local innovation, informs national policy and provides many other positive contributions to society.

In **Tangible Benefits**, SFI commits to the Irish people that the research we fund will make the greatest possible difference for our society and economy. This aligns strongly with two of the Programme for Government's core missions: *A Better Quality of Life for All* and *Reigniting and Renewing the Economy*. This includes everything from creating high-value jobs, to next generation healthcare which would also aid in responding to future pandemics, to research that informs government policy decisions, enhancing the wellbeing of the people of Ireland and transforming society for the better.

To achieve the high-level ambition of **Delivering Today,** each theme has specific corresponding actions.

9 The economic rationale for public R&I funding and its impact, DG RTD, European Commission, 2017.

10 The Research and Development Budget (R&D) 2018-2019, Government Budget Allocations for R&D, the Department for Business, Enterprise and Innovation

11 European Innovation Scoreboard, European Commission, 2019

Excellent Research

Having a strong pipeline of excellent research in Ireland will play a critical role in delivering on the UN's Sustainable Development Goals, the Government's *Green New Deal* mission, navigating the digital revolution and the changing nature of work.

SFI has created a step-change in the performance of the Irish research and innovation system. For example, the SFI Research Centres and other industry-facing programmes have secured unprecedented industry co-funding and collaboration. The research SFI supports leads to better technologies, new products, new processes and improved services. This, in turn, advances Ireland's knowledge economy, enhances societal wellbeing and builds resilience for the future.

SFI's new strategy ensures Ireland will power up the excellence of Irish science again, by ensuring a constant flow of new scientific breakthroughs and innovation, and bringing about solutions to societal challenges. SFI will expand the industry-academic partnership activity through delivering various co-funding schemes across the entire new strategy. SFI will ensure the highest standards of research practice, will be innovative in its own processes to ensure excellent research is supported and will expand the international footprint of Irish research. To deliver excellent frontier research that brings about scientific breakthroughs, we will maintain a portfolio balanced between frontiers and applied research, and between Research Centres, individual-led research and our other schemes. A balanced portfolio will ensure that all STEM researchers have the opportunity to compete for SFI funding. SFI will balance its activities by becoming a more data-informed organisation (discussed further in **Anticipating What's Next**). These data will be used to bring real insight into how we continuously monitor the funding portfolio and address any critical gaps. We will also do so through collaborating with others across the research and innovation system (discussed in **A Cohesive Ecosystem**).

Actions:

1. **Strengthen SFI's individual-led team programmes** to allow frontiers research ideas to spark and grow from the bottom-up. SFI will grow all of its frontiers research schemes to ensure that SFI delivers a portfolio balanced across frontiers and applied research. We will, for example, significantly expand the Frontiers for the Future Programme and the Starting Investigator Research Grant programme.
2. **Grow and evolve the SFI Research Centres programme and other enterprise facing SFI programmes** to drive research across all areas of STEM. We will develop and support the growth of existing Research Centres. New Proto-Centres will be funded to start the process of scaling existing groups of expertise up to full Research Centre levels and we will explore the options for merging existing centres into National Research Institutes in future funding phases. The new Research Centres, Proto-Centres and National Research Institutes will be funded in areas of unique opportunity for Ireland and where the Centre model is appropriate. (See Action 14 in **A Cohesive Ecosystem** also in which collaborative all-island research partnerships will share expertise to mutually benefit both North and South).
3. **Embed SFI and national standards of open science, good research practice and research governance including integrity, data management and reproducibility, open access to publications and data, ethics, inclusivity and diversity** in the research funded by SFI. This will enable us not only to align and influence, but to shape research policy and lead on best practice internationally. These areas are integral to excellence in the science funded by SFI.
4. **Invest in state-of-the-art research infrastructure programmes** which will facilitate high quality excellent research.
5. **Expand Ireland's global presence**, working with DFHERIS, building upon SFI's extremely successful pilot in the United States, to identify and facilitate collaboration for international researchers, funders, philanthropic organisations and enterprises interested in partnering with Irish research and innovation, and to attract researchers, industry and entrepreneurs to Ireland.
6. **Develop and implement simple, transparent and consistent processes** to drive efficiencies by increasing ease-of-use for SFI applicants and awardees. SFI will drive internal efficiencies by utilising economies of scale. Additionally, SFI will build on global best practice and balance the need for accountability and value for taxpayers' money with sensible submission and reporting requirements. We will strengthen SFI's adherence to State aid regulations by reviewing the State aid adherence of all SFI funding programmes and implementing the resulting findings.
7. **Continue to support delivery of both frontiers and applied research excellence** through enhancing and expanding the existing SFI Research Centres (see also the actions in **Future Skills** and **Tangible Benefits**).

Top Talent

Ireland's societal and economic wellbeing depends critically on the people who live and work here. The availability of top talent will be one of Ireland's greatest assets as we compete globally to be a world-leading knowledge driven economy. Top talent will enable Ireland to tackle the combined challenges of preparing for Brexit, achieving the *Green New Deal* and preparing for future pandemics. SFI's highly competitive, international peer-review based processes ensure that the best people at each career stage are supported. This top talent is a key output of SFI's research funding and is the foundation for Ireland's knowledge economy.

We will develop the current research talent in Ireland to help fuel academia, enterprise and the public sector and drive national competitiveness and productivity. SFI will work to utilise and expand the existing talent pool to work in new fields and to respond to specific economic and societal challenges.

SFI will further develop appropriate career programmes so that there is a continuum of talent with opportunities to progress through the research and academic career stages, from early-career researchers right through to established global research leaders. We will use targeted data analytics to assess potential career gaps and skills deficits and, if not covered by existing national programmes, we will ensure that SFI works with other funders to resolve the career gaps. We will focus initially on early-to-mid-career researchers who are building their independent research careers. Talent development will also focus on facilitating 'brain circulation' and talent mobility between Ireland and abroad and recruiting star talent to live and work in the country.

Excellent Research and **Tangible Benefits** can best be attained when equality, diversity and inclusion are embedded in leadership and decision-making, in research teams, in research content, within SFI and across the research and innovation system. The business case for diversity in the knowledge and innovation economy is overwhelming - diversity drives innovation and productivity in business globally. SFI is committed to creating an environment for diverse talent to thrive. Through our actions, we will enhance the opportunities for all researchers and ensure underserved and underrepresented groups can become outstanding contributors to scientific research and can have successful careers in STEM.

By promoting curiosity in all age groups and education levels, SFI will ensure the talent pipeline is secured in the years ahead. To achieve this, we will champion the adoption of best practice in STEM education, for example by enabling partnerships between formal and informal education providers.

Actions:

1. **Align SFI's suite of programmes** internally and with other funders, so that there is a continuum of support for researchers as they progress from early career to established researchers. This will include an appropriate number of scheduled and targeted programmes for postgraduate researchers, early and mid-career researchers.

2. **Identify and recruit targeted world-leading researchers and rising stars to move to Ireland** to act as nuclei of world-class research groups which will attract Foreign Direct Investment, entrepreneurial activity, and bolster local expertise. Working with enterprise, the Higher Education Institutions, and through the SFI Research Centres, we will target and expand specific research sectors and joint appointments with world leading international universities in strategic areas of importance for Ireland.

3. **Expand the SFI Discover Education Programmes** (Discover Primary Science and Maths Awards and Smart Futures) to grow participation in science education and bridge careers awareness into undergraduate programmes.

4. **Facilitate researchers to flow into and out of Ireland** so that knowledge and skills are brought to Ireland from abroad and vice versa through increasing mobility mechanisms and opportunities. This brain circulation – as opposed to brain drain - will drive further internationalisation of Irish research, building researchers' networks and increasing competitiveness in international partnerships and funding, e.g. when applying for EU funding in Horizon Europe.

5. **Improve equality, diversity and inclusion, including gender diversity[12],** at all stages of the research career path. We will increase engagement with under-served and under-represented communities to understand the barriers that exist. Through innovations in our calls and advocating for policy changes, we will continue to address equality, gender and diversity imbalances and inclusion. We will also address these challenges in the context of awardees and teams funded, in research content and in the consideration of the end users of research. We will continue to address diversity imbalances in the reviewers used by SFI and in SFI staff members. Through innovative initiatives, we will support policies to improve wellbeing and work-life balance in the research environment. SFI will publish a comprehensive Equality, Diversity and Inclusion Strategy outlining specific actions and targets for equality, diversity and inclusion as a follow up to the 2016-2020 strategy.

6. **Increase geographical involvement and engagement** across the country, including through the SFI Research Centres, and increased collaboration with the new Technological Universities and the Institutes of Technology to ensure that benefits arising from our activities are realised across the entirety of Ireland. For example, to grow the participation of under-represented HEIs in SFI schemes through piloting seed research funding activities.

7. **Grow the SFI public engagement programmes** to support engagement with and participation of a broader range of civil society and community groups across SFI's schemes, for example by prioritising investment in programmes that specifically and appropriately target certain community groups or wider civil society.

8. **Co-develop a shared KPI** with partners to ensure that gender diversity is prioritised within the Irish research and innovation system. The development of the successor to Innovation 2020 provides a great opportunity to agree this shared KPI.

12 https://www.sfi.ie/resources/SFI-Gender-Strategy-2016-2020.pdf and https://www.education.ie/en/Publications Policy-Reports/gender-action-plan-2018-2020.pdf

Tangible Benefits

SFI's ultimate aim is to improve the lives of people in Ireland. SFI is uniquely positioned to ensure that the talented people and science we support make a positive difference. The research that is funded by SFI delivers benefits through increasing prosperity and productivity; improving quality of life, health and wellbeing; informing Government policy; and addressing environmental issues. SFI will continue ensuring that the knowledge created by its funded research is beneficial, transferred to and absorbed by broader society.

SFI has been internationally recognised for successfully balancing research excellence with the pursuit of potential economic and societal impact. As an organisation SFI will revitalise how internal practices and processes maximise potential impact and ensure value for public money. We will work with the wider research and innovation system to achieve this for Ireland.

One way for research to have the best positive benefit is for researchers and funders to work together to prioritise the benefits of the research at both the application stage and during the research itself. In SFI's new strategy, SFI commits to working with and supporting its researchers to ensure that potential positive benefit is maximised.

Small and Medium Enterprises account for 99.8% of Ireland's active enterprises[13]. The Programme for Government *Our Shared Future* places a particular focus on expanding the linkages between research and domestic SMEs. The human capital, innovation and technology created by SFI-funded research must be transferred effectively to this vital sector of the Irish economy. SFI's new strategy will help boost the productivity of domestically owned enterprises by focusing on building partnerships and connections between our SMEs and Higher Education Institutions. This will be done through knowledge exchange, through formal technology licensing, through new SME supports, through spinning out new companies, and through working with Enterprise Ireland, the Institutes of Technology, and the new Technological Universities[14].

Our programmes form a key element of the drive to boost Ireland's international competitiveness and to attract Foreign Direct Investment (FDI). SFI Research Centres and their large enterprise partners have engaged and will continue to engage very successfully, encouraging FDI into Ireland and further embedding the partners in Ireland. Importantly, SFI will facilitate the development, at scale, of co-funded research and innovation programmes with enterprise.

13 https://enterprise.gov.ie/en/Publications/Publication-files/SME-and-Entrepreneurship-Policy-in-Ireland.pdf

14 https://www.education.ie/en/Publications/Education-Reports/connectedness-collaboration-through-connectivity.pdf

Actions:

1. **Increase evaluation of the potential impact of applications for funding and of awards** made by SFI and clearly communicate the review process and criteria to applicants. This will ensure that SFI awardees are focussing on increasing the potential economic and societal impact of their awards at application stage, while doing the research, and after the award has ended. This in turn will increase the likelihood of the impacts being realised.

2. **Improve evidence-based policy** to better inform national policy making. Working with DFHERIS and other agencies and Departments, we will establish a national policy summit, platform and briefing opportunities for stakeholders to discuss national policies and challenges with relevant researchers and vice versa.

3. **Collaborate with policy makers, other funders, researchers, enterprise and civic society** to build knowledge transfer capacity in the research and innovation system and agree performance measures around economic and societal impact.

4. **Improve SFI's measurement and analysis of wider economic and societal impact** to better capture and communicate the achievements of the SFI-funded research community to different audiences, learning from others and piloting new activities.

5. **Introduce new programmes to improve SME and entrepreneur engagement** with both SFI-individually funded researchers and with SFI Research Centres, for example, creating research and innovation hubs for industry and academic engagement across the regions, so that real-world impacts of knowledge transfer are better realised. These hubs will follow EU Smart Specialisation principles, building key skills in regional clusters. The new schemes will focus on reducing lead time, bureaucracy and complexity. We will better collaborate with Enterprise Ireland, the Institutes of Technology and the new Technological Universities. We will explore the use of European State Aid Exemptions and, in conjunction with the revised National Intellectual Property Protocol, we will ensure that maximum benefits can be realised through the collaborative efforts of enterprise and the research community alike.

6. **Enhance the Research Centres programme** to further its economic and societal impact. The new funding model for the second phase of the Research Centres will ensure a step-change increase in the funding leveraged by the Research Centres. We will develop an ambitious programme for the third phase of Research Centres.

7. **Build strategic, national and international partnerships** to drive economic impact and to address societal challenges, including the UN Sustainable Development Goals and Horizon Europe's missions, with climate action being an example of a key priority.

Preparing For Tomorrow:
A Cohesive Ecosystem, Future Skills, Anticipating What's Next

As we look forward to the decade ahead and the predicted and novel developments, challenges and opportunities that humanity will create and be presented with, it is the most advanced and prepared research-intensive countries that will benefit and be most resilient. The world-class research and talent SFI supports will prepare Ireland to lead in tackling persistent and new challenges; drive progress towards new technologies such as AI and cybersecurity; and enable Ireland to gain first-mover advantage in entirely new areas.

For these reasons, and to enable Ireland to go from being *'a fast follower to a first mover'*, **Preparing for Tomorrow** is focused on three objectives: **A Cohesive Ecosystem, Future Skills** and **Anticipating What's Next**. These three objectives are summarised below:

A Cohesive Ecosystem

In **A Cohesive Ecosystem**, we will build on the clear mandate of the new Department of Further and Higher Education, Research, Innovation and Science (DFHERIS) to create a much more cohesive research and innovation system. We will collaborate with other Departments and other funders to help bring this mandate to fruition. We will significantly strengthen our relationship with the Higher Education Authority (HEA) and the Irish Research Council (IRC). We will maintain the strong working relationship with IDA Ireland and Enterprise Ireland (EI), and the Department of Enterprise, Trade and Employment (DETE). We will establish channels of communication between science and the public it serves, co-creating research with citizens and pursuing their priorities. We will continually innovate internally to better serve our stakeholders. By collaborating better with other funders and Departments, we will collectively achieve a national research and innovation system which is embedded in the fabric of society and realises the potential of research with and for all of Ireland's people.

Future Skills

Through **Future Skills**, SFI will support the development of the world's most sought-after skilled workforce, supporting the Government's mission of providing *better opportunities through education and research.* This ensures that, as a nation, we will be well-placed to respond to future opportunities or our next challenge. We will build on SFI's existing skills programmes, such as the Centres for Research Training, to provide world leading, highly agile and accessible advanced learning programmes that attract a diverse student base. We will also continue to develop SFI's highly successful placement fellowship programmes to support life-long learning and knowledge exchange out of academia into industry and public service.

Anticipating What's Next

In **Anticipating What's Next**, SFI will leverage next generation analytics and Irish and global expertise to proactively scan horizons and identify emerging areas of science and technology. We will work with the arts, humanities, social sciences and behavioural sciences to implement these technologies, helping to *reignite and renew the economy.* We will work with national partners to identify future economic and societal needs. Responding to these needs and emerging areas will require new funding schemes, including those in Future Skills, and new partnerships, including those in A Cohesive Ecosystem. For example, we will target first-mover advantage by launching high-risk high-gain schemes and we will expand research involving multiple disciplines. We will work with Departments and other agencies on challenge-based funding to respond proactively to major issues and opportunities for Ireland.

A Cohesive Ecosystem

To maximise the benefits of investment in research nationally it is important to support the mandate of the new Department of Further and Higher Education, Research, Innovation and Science in creating a more cohesive research and innovation ecosystem. This opportunity requires new thinking and new ways of working across the ecosystem with collaboration and alignment at its core. Further, to enhance the societal relevance of research we also need to increase the active participation of citizens and stakeholders across all stages of research and innovation.

A Cohesive Ecosystem means: **1)** collaboration that spans, and connects, the empowerment of citizens to co-create research; **2)** showcasing the value of science and telling compelling, timely success stories; and **3)** building channels of communication across the system, particularly seamless collaboration between funders, research performers and Government Departments and agencies.

The most consistent theme that emerged from SFI's strategy consultation process across all stakeholders was that the national research and innovation landscape is complex[15] and there is a need for a more collaborative and coherent research system. Researchers who participate in a seamlessly connected system will be better able to navigate the system, quickly and easily apply for funding, and devote more of their time to conducting the research, ultimately growing the excellence in the system and maximising benefit for the economy and society. There was a very strong message from stakeholders that greater collaboration and partnership among people, teams, institutions and organisations would increase the performance (e.g. fill gaps, reduce duplication, increase system efficiencies, and identify opportunities for collaborations in research areas, career stages and technology readiness levels) and return on investment of the national system.

The aim of research is to enhance understanding and improve the world we live in. Advances in technology mean that research is much more accessible to people than ever before. Yet studies tell us how disconnected the public feels from research, often due to lack of belonging and ability to do science. There is also a disconnect in the 'storyline' between the laboratory breakthroughs and societal benefits. It is imperative that we engage the public in discussions about research, about how research positively benefits their lives and better showcase the value of scientific research. Citizen Science[16] and related concepts are gaining significant traction internationally. Through increased familiarity with the scientific process, the people of Ireland will become more accustomed to rationally questioning assertions with which they are presented as well as their sources, for example, exaggerated news stories.

Through **A Cohesive Ecosystem**, SFI will help empower people to use STEM to understand the world around them and think critically about the challenges we face in society, and to use, respond to, take part in, and own research and innovation. By opening dialogue this way, SFI will help build a more scientifically engaged public and inspire those with a passion for curiosity to make a difference through pursuing STEM careers.

We will enhance how we and the research and innovation system communicate the value and results of research through sharing stories of projects and how they benefit Ireland and ensuring the outputs of research feed into evidence-based policy making.

SFI cannot deliver a more collaborative and aligned national research and innovation system alone. We all must respond to stakeholders' consistent feedback and improve the system together in Ireland. SFI will drive a step-change in how it collaborates with all stakeholders to increase alignment across the system and to recognise the challenges and the interdependencies of the entire system, so we work together better to address them. We will work to strengthen SFI's existing relationships with EI, IDA and DETE; these relationships are vital supports for attaining Tangible Benefits from the research we fund. SFI will also look at its own internal work practices to ensure that the conditions are set for collaborative working within the new Department of Further and Higher Education, Research, Innovation and Science and externally with other Departments, other funders and other organisations.

15 Ireland's research and innovation system consists of funding agencies such as EI, EPA, HEA, HRB, IRC, SFI and charities, research performers such as universities, state agencies, Institutes of Technology, enterprises, several other actors, including individual Government Departments.

16 Citizen science usually involves research projects where the public (non-professional scientists) are directly involved.

Actions:

1. **Undertake public consultations** to identify which societal issues are important to the people living in Ireland and to help inform SFI's funding priorities. We will engage in a large-scale public consultation similar to that used in other international jurisdictions, customised to the Irish system.

2. **Grow Citizen Science across SFI-funded programmes** to drive accessible and publicly supported research. For example, we will trial introducing a dedicated new scheme that funds Citizen Science.

3. **Incentivise and require researchers to engage early and often** with adopters, designers, end-users and purchasers of their research outcomes, with entrepreneurs, and with regional groups to maximise the potential impact of the research funded by SFI. This includes introducing appropriate engagement mechanisms, so that stakeholder involvement in the review process results in selecting proposals with more potential impact.

4. **Introduce appropriate engagement mechanisms across SFI's processes** so that stakeholder involvement in the review process results in selecting proposals with more potential impact.

5. **Enhance SFI's and the national research and innovation system's content curation** to enable all stakeholders to work together to best showcase Irish research and its socioeconomic impact on a national and global scale. We will raise the capability of scientific storytelling by supporting the communications capability across the research and innovation system. For example, we will develop comprehensive communications training for researchers with associated platforms, workshops and toolkits.

6. **Build a connected stakeholder network across the research and innovation ecosystem** to drive the proactive and collaborative promotion of research. This network will make timely, relevant and meaningful clarifications of how research outcomes are resolving current societal needs.

7. **Champion the establishment of a Research Advocacy Forum** so that enterprise and philanthropic stakeholders and members of the public advocate for science, to drive increased national and international support for Irish research and innovation.

8. **Expand programmes that bring 'Science to Life through everyday activities'** to support science for all. For example, by broadening Science Week, by increasing media investment into films, blogs and documentaries about science.

9. **Internationally promote Ireland's science** to recruit world-leading researchers and to drive Ireland's international reputation. Our expanding global presence will allow SFI to further participate in key international fora and showcase Ireland's excellent research capabilities.

10. **In partnership with DFHERIS, work better with funding agencies, Government Departments and HEIs** to identify how best to improve alignment, co-operation and collaboration. We will better align SFI's funded portfolio with that of other funding agencies in terms of scientific domains, career stages and technology readiness levels. We will work openly with departments, agencies and the HEIs to understand their priorities and needs, and to develop shared objectives, KPIs and/or deliverables. We will also ensure a co-ordinated approach involving the use of compatible IT applications and processing systems to reduce duplication and allow for administrative efficiencies for applicants and the seamless transfer of applications between funders.

11. **Communicate the value of increased national alignment and investment in research** in collaboration with research funders and HEIs, for example by supporting the establishment of a 'One Voice' group to collectively advocate the importance of investment in research, innovation and higher education across the entire system.

12. **Collaborate better with other funders and improve our processes** to become a sought-after "lead-agency"[17] partner of other research funders and Government Departments nationally and internationally. We will grow the number of co-funding partnerships between SFI and other national and international funders by learning from and building on previous successful partnerships, such as the COVID-19 Rapid Response Call, the US-Ireland R&D partnership programme, and our co-funding partnerships with the IRC, Health Research Board (HRB), Environmental Protection Agency (EPA), the Wellcome Trust, the Royal Society, and the UK Engineering and Physical Science Research Council (EPSRC). This will increase partnerships and funding options available to researchers and engagement practitioners in Ireland and will grow multidisciplinary research activities both here and abroad.

13. **Influence the European research agenda** in programmes such as Horizon Europe to ensure that Irish expertise and interests are well represented. We will work with the relevant Government Departments, agencies and the National Delegate network to achieve this.

14. **Create, with others, the all-Island of Ireland Research and Innovation System.** We will champion major research collaborations between Ireland and Northern Ireland, in areas of opportunity, mutual interest and where gaps exist, acting as lead agency for co-funding with partners in Northern Ireland and the rest of the UK. This could involve all-Island of Ireland: formal collaborative partnerships, Research Centres, challenge-based funding, individual investigator collaborations, shared PhD training and infrastructure, and joint research professorships.

15. **Support increased inter-institutional and national sharing of research infrastructure** across academia and enterprise to increase the utilisation and efficiency of the funded research infrastructure. We will champion, with others, developing a national infrastructure database and an infrastructure roadmap to achieve this and ensure alignment of funded research infrastructures both nationally and internationally.

17 A "lead agency" is responsible for the administration of a funding scheme, on behalf of and with the agreement of other co-funding partners. Eligible researchers submit a single (collaborative) proposal that undergoes a single review process conducted by the lead agency. It simplifies the submission and evaluation process for applicants, reduces administrative burden and ensures a single point of contact for all available information when applying for a grant. The different project parts are then (typically) financed by the respective funding agency so that no money needs to be transferred across funding organisations or borders.

Future Skills

While the future of work is unclear, experts foresee new technology and new ways of doing business and workers operating in a continuously changing environment, with roles disappearing, being redefined, and organisations requiring new skills and a focus on life-long learning. This will have a big impact on tomorrow's workforce and society, and we will need to plan and adapt accordingly. We need to evolve higher education training such that it is agile, responsive and accessible to a diverse student base representing all walks of life.

With increasing and rapidly evolving demand for a highly-skilled, adaptable workforce, an increasing share of skilled researchers are taking, and will continue to take, jobs in industry and other non-academic sectors. More than half of those who graduate with a PhD now choose careers outside academia[18] and there has been particularly strong growth and transfer of skills to critical high-value areas such as ICT, manufacturing and pharmaceutical industries.

An entrepreneurial mindset requires a mix of individuality, creativity, resilience, life-long learning and leadership[19]. These key skills are increasingly in demand by enterprise, academia and the public sector and are different from the skills needed in the past. If Ireland does not invest in these skills today, we will not be competitive in the future. By developing future-proofed skillsets, we will improve productivity and resilience to the changing nature of work in the future, e.g. disruptive changes in the workplace due to digitisation and automation.

SFI will train researchers for the future who, through their broad set of skills, will become the most highly sought-after future employees and research leaders globally. We will do this through evolving and designing outstanding industry and society-facing skills development programmes that build the required skillsets and providing researchers with opportunities to gain hands on experience with emerging and leading employers. These programmes are likely to change continuously in response to changing demands.

Actions:

1. **Increase the use of SFI's world-leading PhD training framework** from the SFI Centres for Research Training in suitable programmes such as SFI Research Centres, the SFI Spokes programme and the SFI Strategic Partnership Programme. This PhD training will be aligned to the National Framework for Doctoral Education and designed so that more SFI-funded PhD students obtain a wide breadth of highly sought-after skills, e.g. entrepreneurship, and meet the needs of small, medium and large enterprises in Ireland.
2. **Grow and evolve the Centres for Research Training programme** to meet the future skills needs of the private and public sector in Ireland. This programme is inter-institutional and cohort-based.
3. **Increase researcher exchange mechanisms** to facilitate researchers to flow into and out of enterprise, public service and government, so that knowledge and skills are brought to and from academia. We will update the SFI Industry Fellowship Programme to increase bidirectional knowledge exchange between academia and enterprise. We will launch Societal Fellowships so that researchers can work with government, the health system and local councils in Ireland on national policies and initiatives which require STEM expertise and broaden expertise in the likes of AI, machine learning and data analytics within the public service
4. **Ensure SFI's industry facing programmes are futureproofed** and ready to grasp emerging areas of opportunity and best practice, as identified through activities in **Anticipating What's Next**.
5. **Work with HEIs to ensure that all research team members can engage in appropriate career supports.** This will include piloting an initiative to incentivise SFI award holders to ensure that their team members receive the necessary holistic training for their development.

18 Graduate Education Outcomes Class of 2017, Higher Education Authority, 2019.

19 Entrepreneurial Education in Practice: Part 1 – The Entrepreneurial Mindset, OECD and European Commission Thematic Paper, 2015.

Anticipating What's Next

To be at the forefront of discovery, SFI must become a more agile, future focused and data intensive organisation. Through collaboration, and with the support of the new Department, SFI will deliver as an experimental and disruptive organisation to progress Ireland from a technological fast follower to a first mover. This in turn will ensure the research we fund disrupts and transforms Ireland's society and economy.

SFI will continually reinvent itself to create an exciting research environment that is attractive to potential partner organisations and eminent researchers, investors and enterprise, both national and international. We will evolve and advance our own practices and procedures to support non-traditional disruptive and transformative research. We will become a more agile agency so that we can test ideas and experiment to improve our performance. We will do this by trialling new approaches to research funding, reviewing and monitoring, and by leveraging our capabilities to build novel partnerships with enterprise and with public and philanthropic organisations in Ireland and abroad.

To ensure that the research SFI funds provides strategic advantage for Ireland, we must continually scan the research horizon and ask the question "Why in Ireland?". Specifically, why Ireland needs this research and why Ireland is best placed to perform the research.

Working with our research community in enterprise and academia and partners we will identify emerging research areas and niches in which to invest and seize first mover advantage for Ireland. By opening new research fields and by directing investment into promising research areas, Ireland will be a first mover and can establish a world-leading position. This position will have the potential to drive future economic and societal progress. Our expertise will allow us to act as an opinion leader, informing the national research agenda.

We also need to be data enabled and deliberate about our investments. Whilst all areas of research are being pursued globally, Ireland has a fixed amount of resources available. These resources need to be prioritised strategically. Priority setting will focus on three criteria: 1) the excellence of the research; 2) the economic and societal impact the research will have; and 3) why Ireland should undertake this research. This last criterion will minimise concerns of too much duplicated research and will increase the impact to Ireland of seizing first mover advantage in these areas.

Data are now a critical asset for all organisations. SFI will build our data analytics capabilities in our day-to-day business to be more strategic, responsive and proactive in how we fund research, balancing with national priorities and working with others across the research and innovation system. We will collaborate nationally and internationally to grow data and evidence around research funding best practice. We will use these data-driven insights to develop innovative new funding mechanisms and review processes, supporting challenge-based and Advanced Research Projects Agency (ARPA)-like funding and high-risk high-gain research.

Actions:

1. **Conduct foresight and horizon scanning activities** with various stakeholders to better identify where SFI can contribute to Ireland's future economic and societal needs. By utilising existing work, e.g. from the European Commission's and national activities, and building on them, we will identify Ireland's strengths, capacities and gaps, and where SFI should direct support.

2. **Identify specific emerging areas of science** of relevance for Ireland, to gain first mover advantage for Ireland. We will identify these areas by capturing new sources of data and evidence and working with experts. We will launch targeted programmes to fund scientific research in these emerging areas, where the review criteria specifically include justification of "why in Ireland?".

3. **Build SFI's data analytics capabilities** to ensure that we can respond to macro trends in the most efficient, effective and data-informed way. This will facilitate the modelling and prioritisation of how SFI can contribute to resolving Ireland's future skills, knowledge and societal needs. Using data and analytics and working with experts, we will balance SFI's funding in a strategic manner across the various spectra: across the continuum of research, within National Research Priorities Areas and beyond, from individual research teams to SFI Research Centres, from funding in research areas defined by SFI (top-down) to open calls (bottom-up), and using different funding models.

4. **Expand independent evaluations of SFI activities** to optimise performance from individual schemes and from our complete portfolio of programmes. We will use these data to identify what gives the best return-on-investment for Ireland. We will benchmark SFI-funded schemes against international comparators to increase their performance.

5. **Become the national agency for Challenge-Based Funding** to provide the scale necessary to advance solutions to societal and economic challenges including Irish and European national missions, the UN Sustainable Development Goals, and specific technological and cross cutting challenges. We will develop a world-class challenge-based funding capability, build collaborations and widen access to challenge funding within the national system and internationally to find solutions.

6. **Pilot ARPA-like initiatives** to deliver innovative outcomes for Ireland in areas of national urgency. We will identify existing technologies or research areas that are yet to be exploited but which could solve a particular challenge. To do this, we will hire the best experts from around the world to manage the project for SFI and lead high-performance research teams.

7. **Launch new disruptive innovation schemes** to deliver outcomes much quicker than traditional research funding. These innovation schemes will use accelerated alternative review processes to fund research into areas timely for Ireland's economy and society.

8. **Expand research involving multiple disciplines** which is fertile ground for scientific breakthroughs, addressing complex economic and societal challenges, and for the discovery of new fields of research, providing first-mover advantage for Ireland.

9. **Fund high-risk high-gain research** to earn first mover advantage for Ireland in strategically important emerging areas of science, by creating new programmes that use alternative review processes to support this kind of research.

10. **Build novel national and international partnerships** to diversify the funding streams for research in Ireland. These partnerships will leverage the unique capabilities of SFI by offering research programme development and administration as a service. For example, we will target new partnerships of scale between SFI and philanthropic organisations.

Statement on Resources

Ireland's ambition is to become a global innovation leader, with economic and societal resilience against future shocks enabled by a vibrant RD&I ecosystem. As outlined above, key national strategy documents such as *Innovation 2020, Future Jobs Ireland* and *Project Ireland 2040*, as well as the latest Programme for Government *Our Shared Future*, point to a substantial increase in RD&I investment by 2025. The stated intent of the Irish Government in *Innovation 2020* is to increase RD&I funding to 2.5% of GNP.

It is important to note that Ireland is not alone internationally in this ambition. Many advanced economies are substantially increasing their investment in RD&I as the best way to ensure future prosperity and resilience to economic and societal shocks. Globally, the trend amongst advanced economies, particularly in response to the COVID-19 pandemic, is for increased investment in RD&I with countries that rank at the upper end of the Innovation Index investing between 3% and 4% of GDP. The European Union has set a target for itself, and for all member states, to invest 3% of GDP in RD&I. As a nation we will need to close the gap and keep pace with this international trend if we are to build, attract and retain top research talent and the indigenous and foreign enterprises that will retain and provide additional high-value jobs in the future.

In developing the targets and actions outlined in this strategy we have made a number of assumptions including that Ireland will have achieved the stated level of RD&I investment by 2025 and that this investment, combined with funding for other initiatives such as a North-South academic corridor, would enable a doubling of SFI's budget by 2025. However, recognising that such investment is dependent on Ireland's budgetary position, the deliverables outlined in this Strategy may be adjusted up or down according to final budgetary allocations each year to 2025.

Our modelling is based on an assumed capital increase of 15% each year to 2025. We have mapped this increase against a bottom-up calculation of the number of calls we will run each year across our full suite of programmes from the earliest individual awards to advanced Research Centre programmes. At 15% annual growth we can deliver against Ireland's strategic ambitions. Should the annual growth rate be smaller we will adopt a data led approach to balancing the available budget across the portfolio to achieve the maximum return on investment for our economy and society.

Importantly, the costs outlined above are capital related but there is an additional administrative expense to run and manage the balanced suite of programmes required for a truly vibrant research ecosystem. This includes both SFI staffing cost as well as programmatic costs such as international peer review. However, due to economies of scale and the introduction of new efficiencies in how grants are administered, administrative expenses would grow less than proportionately to the capital budget.

Key Performance Indicators

Central to a successful strategy is the identification of Key Performance Indicators (KPIs) which guide strategic decision making and are the ultimate definitions of success. Typically, organisations have a small number of KPIs which are supported by a suite of underlying metrics; this is the approach SFI will take.

SFI has identified a number of KPIs that will allow us and our stakeholders to track the high-level progress and success of our strategy. These are comprised of:

(a) six SFI-driven KPIs to demonstrate how SFI is directly impacting the research system; and

(b) as SFI is just one of a number of players in the research system, three shared KPIs will be tracked to understand how effectively SFI and its Government partners are delivering on common objectives. These new KPIs include a shared KPI around innovation leadership which recognises that SFI is one of several key players (with DFHERIS, DETE, HEIs, HEA, IRC, IDA, EI, and others) who play a significant role with many others in making Ireland a Global Innovation Leader.

SFI will also use a larger suite of performance metrics. These will monitor the detailed operational implementation of the strategy and enable operational decision making. SFI management will leverage these metrics to prioritise and optimise activities in order to achieve the KPI targets.

As quantitative metrics cannot fully capture all of the relevant factors in such a complex system, SFI will also qualitatively monitor performance through, for example, evaluations, impact assessments and case studies.

The KPI targets outlined below are based on the assumption that SFI obtains an appropriate budget.

Reporting

Progress against the KPIs will be reported to the SFI Board at each meeting. Progress against the metrics will be reported to the SFI Board biannually and published annually on the SFI website.

Quantitative Key Performance Indicators

Strategic Area	SFI Key Performance Indicator	Rationale	Baseline/Target
Excellence	Excellence of publications by SFI-funded researchers compared with global average	Funding excellent research is at the core of our strategy. This is a strong, independent and consistent indicator of excellence.	SFI researchers cited **1.84 times** as often as the global average/ SFI researchers cited **2.0 times** as often as the global average
Talent and Skills	% Postgrads and Postdocs departing to positions outside of academia after six years	Take up of postgrads and postdocs from SFI grants outside of academia will be a strong indicator of the value placed on the skills they've obtained.	57%/65%
Impact	Co-funding[20] of research by companies as a percentage of SFI capital expenditure on relevant new awards	The deeper the collaboration, the greater the potential impact. These will be reflected in contracts with new Research Centres and through SFI Partnerships.	n/a/65%

20 Includes in-kind contributions

Strategic Area	SFI Key Performance Indicator	Rationale	Baseline/Target
Cohesive Ecosystem	Budget invested by SFI in programmes partnering with other funders	A strong indication of how well SFI is working with national and international organisations and aligning national budgets to maximise efficiencies within the national research system. This can be through co-investments, active or implemented Memoranda of Understanding (MoUs), partnerships, collaborative and aligned calls.	€9m/€27m
Overall Performance	Leveraged Funding as a Percentage of SFI Budget	A very strong, independent indicator of the overall success of SFI in delivering excellent talent, excellent research and impact through its EU, International and Philanthropic funding.	55%/60%[21]
Gender	Gender balance of leadership in awards funded by SFI[22]	Excellence can only be attained where gender balance is embedded in leadership and decision-making.	25% women/at least 35% men and women award holders (stretch target 40% of each).
Innovation Leadership (With DFHERIS, DETE, EI and IDA)	"Innovation Leader" on the European Innovation Scoreboard	While Ireland scores very highly in a number of key areas on the European Innovation Scoreboard, if we are to move from a Strong Innovator to an Innovation Leader there are a number of areas for improvement that require more systemic changes to the research system.	Strong Innovator/ Innovation Leader
Deeper company research and innovation engagement (With IDA)	Significant (>€50m) company co-investment in research	Co-investment of this scale would be a strong indicator of the quality of the work of SFI researchers. Working with IDA to achieve this would demonstrate a level of support and cohesion that would pave the way for further such investments.	0/2 (i.e. > €100m in total)
Creation of 'unicorn' companies (With EI)	Number of fast-growing, high value companies based on SFI-funded research	This ambitious target sets the bar for what SFI believes can be achieved from its funded research. This would require strong collaboration with Enterprise Ireland to draw such research through commercialisation to this end.	0/1 (value > €1bn)

21 An ambitious target not only to maintain but to increase the leveraged funding ratio to 60% as SFI's budget increases

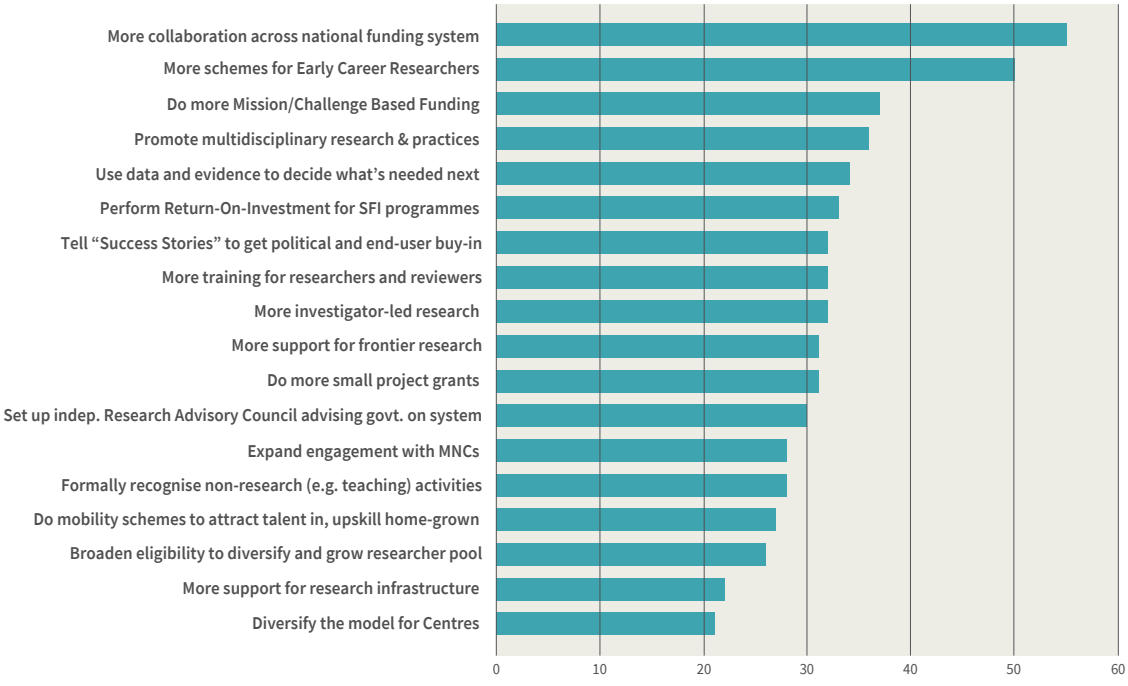
22 There will be even more balance at non-leadership levels; underlying metrics will track this. Full target description: 25% women/at least 35% leadership from underrepresented genders

Appendix 1:

Developing SFI's New Strategy: The Consultation Process

In developing SFI's new strategy, SFI took a holistic consultative and phased approach. We met with international funding agencies to explore international best practice. We also consulted with nearly 1,000 individuals and representatives from within the research community, enterprise, Government bodies and agencies, SFI staff and the general public. We brainstormed and sought feedback using a variety of approaches including workshops, surveys, interviews and focus groups to gather ideas and actions of strategic importance for Ireland, the research and innovation system and for the agency. There were over 1,900 recommended actions that arose from these phase 1 consultations. Figure 1 outlines the summary of the recommendations from the workshops and focus group respondents (n=582 participants).

Figure 1 Recommendations of action (workshop and focus group respondents)



The main recommendations from the workshops and focus groups were for SFI to take a more collaborative approach with funding agencies to build a more effective and efficient national research and innovation system, focus support for early-stage careers, and for SFI to take a more multidisciplinary and challenge-based funding approach to programme investment.

From the survey data (n=308), the most common theme that came through was for SFI to support more frontier/ basic research. This is followed by SFI funding more smaller project grants and introducing more schemes to support the development for early-career researchers. In summary, the main recommendation from survey respondents was for SFI to review and hold an intentional, data-driven portfolio mix both in terms of the research programmes it funds and the talent pipeline it supports.

In the second phase, we tested these findings from our stakeholders against global and national directions of travel for the economy, for society and for research and innovation. We produced a draft strategy and iteratively tested and sought feedback from key stakeholders.

The findings from this open, inclusive process are the foundation for SFI's new strategy.

Appendix 2:
Agenda 2020

Agenda 2020

Shaping Our Future, builds on *Agenda 2020*, SFI's strategy from 2012 to 2020, which was designed to optimise the national research and innovation system and build SFI's international presence. In both these objectives Agenda 2020 was highly successful.

The optimisation of Ireland's research and innovation system has been achieved over the last number of years through a range of initiatives across the spectrum of SFI's remit. These transformative initiatives have driven a step-change in the quality of research being performed in Ireland and increased national industrial competitiveness, public-private and inter-institutional collaboration. There has been an increase in the talent and skills available in the country as well as in Ireland's global research and innovation reputation and footprint. As a direct result of SFI's work there has been an increase in STEM education and public engagement.

SFI's previous strategy, *Agenda 2020*, was written in 2012 during a time of deep economic crisis in Ireland. Consequently, a key focus of *Agenda 2020* was the transformation and optimisation of the Irish research system. In 2012, there was considerable criticism of the Irish research landscape due to a lack of significant industry investment in R&D, poor performance against international benchmarks, a low level of international partnerships and limited large-scale initiatives, amongst others.

Over the period from 2012 to 2019, *Agenda 2020* successfully delivered against its primary objectives. Through a range of transformative initiatives across the spectrum of SFI's remit, SFI has driven a step-change in the quality of research being performed in Ireland and increased national industrial competitiveness and public-private and inter-institutional collaboration. As a direct result of *Agenda 2020*, the level of industry investment increased by an order of magnitude, new international funding and research partnerships were established, engagement with the public increased, new STEM talent and skills were developed, jobs were created now and for the future within the public and private sectors, and there is currently a network of 16 world class SFI Research Centres operating at scale. Consequently, Ireland's global research and innovation reputation and footprint has increased and performance against international benchmarks has improved significantly since 2012. Most of this success was achieved by optimisation rather than substantial increases in budget.

Agenda 2020 was closely aligned with the Government's Innovation 2020 agenda which aimed to achieve the Global Innovation Leader status for Ireland, with a strong, sustainable economy and a better society.

Appendix 3:

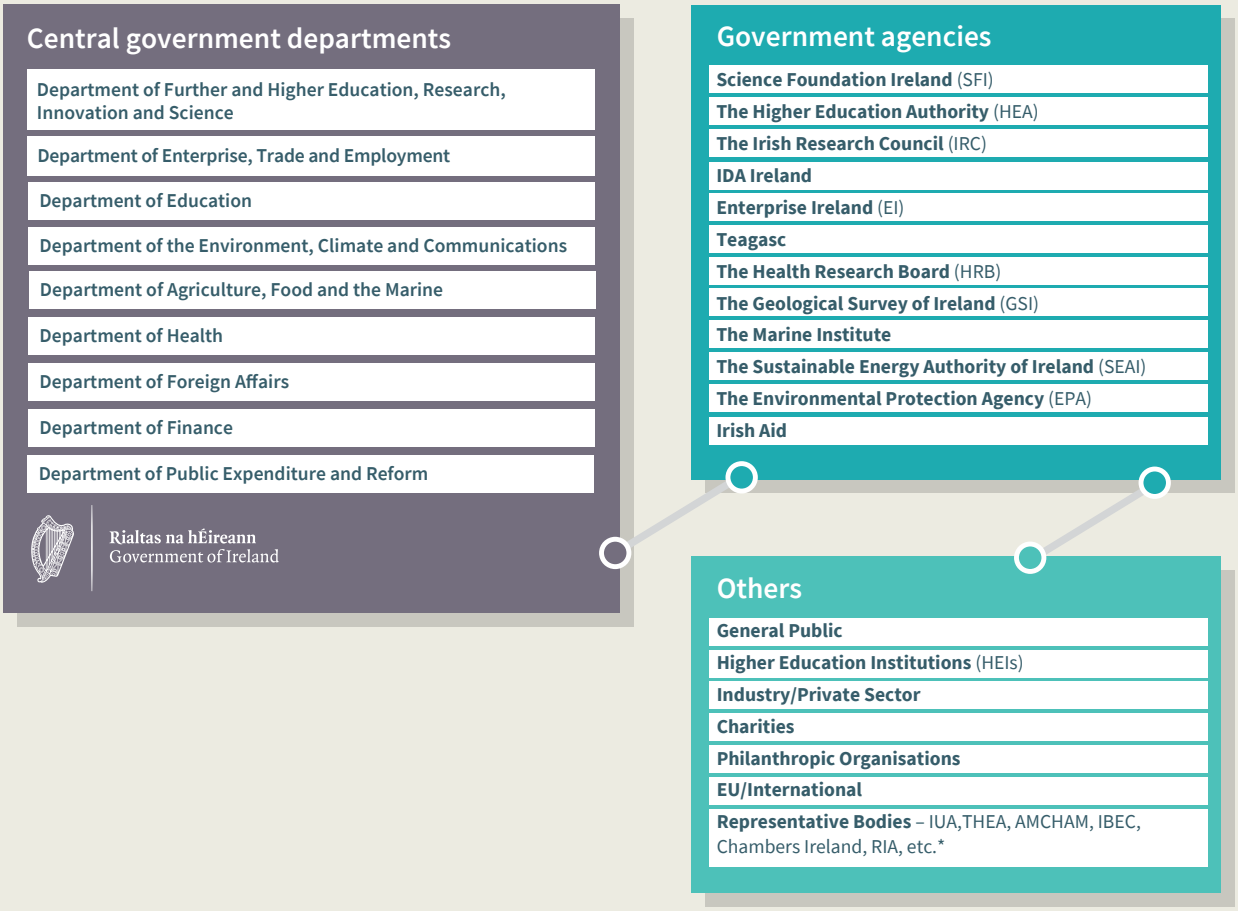
SFI's New Strategy: An Aligned Strategy

SFI's new strategy positions Science Foundation Ireland to drive significant progress as part of the national science and innovation system. SFI is only one of the many key actors (see image below) on which the research and innovation system is dependent. SFI works closely with a range of partners across the national science and innovation system and will increase engagement and collaboration to deliver on *Shaping Our Future*. A key part of SFI's new strategy is to strengthen existing - and build new - partnerships across the system as all partners play an essential role and need to work together to ensure a strong and sustainable national research system.

Parent Department:

Department of Further and Higher Education, Research, Innovation and Science

SFI in the Research and Innovation system



* IUA= Irish University Association; THEA= The Technological Higher Education Association; AMCHAM= American Chamber of Commerce Ireland; IBEC= Irish Business and Employers' Confederation; RIA= Royal Irish Academy.

SFI Aligned to National and International Contexts

Innovation 2020, Ireland's national strategy for research and development, science and technology, has a vision for Ireland to become a **Global Innovation Leader** driving a strong sustainable economy and a better society.

SFI supports this vision and will continue to fund excellent research in strategically important areas, enable internationally competitive enterprise, develop diverse, highly skilled and resilient talent for high-value jobs in academia and industry, build a joined-up innovation system and be an attractive place to national and international talent, entrepreneurs and industry.

SFI's new strategy is dynamic and agile to respond to the changing needs and policies set out in Innovation 2020's successor and will play a key role in its delivery.

Our Shared Future, *"We will endeavour to make Ireland a more attractive location as a base for academic research and researchers. We want research based in Ireland to be at the forefront of the next phase of disruptive technologies, leading rather than following the technological revolution while also being a centre for foundational research"*

The National Skills Strategy 2025, *"will support development of a well-educated, well-skilled and adaptable labour force, creating and sustaining a strong pool of talented people of all ages living in Ireland"*

SFI's new strategy is also closely aligned with other key strategies:

Whole of Government Plans:

- **Project Ireland 2040:** https://assets.gov.ie/7335/7692660a70b143cd92b1c65ee892b05c.pdf
- **Future Jobs Ireland:** https://assets.gov.ie/6827/6cbfd223cf354f04ac1d7266032effdb.pdf
- **Enterprise 2025:** https://enterprise.gov.ie/en/Publications/Publication-files/Enterprise-2025-Renewed.pdf
- **Global Ireland, Ireland's Global Footprint to 2025:** https://www.ireland.ie/media/ireland/stories/globaldiaspora/Global-Ireland-in-English.pdf
- **A Better World, Ireland's Policy for International Development:** https://www.irishaid.ie/media/irishaid/aboutus/abetterworldirelandspolicyforinternationaldevelopment/A-Better-World-Irelands-Policy-for-International-Development.pdf
- **National Strategy for Higher Education to 2030:** https://hea.ie/assets/uploads/2017/06/National-Strategy-for-Higher-Education-2030.pdf
- **National Risk Register:** https://assets.gov.ie/9294/d5b7898a4d8e47d1a7ff1d9efc6e1e53.pdf **;** https://assets.gov.ie/2405/261018155017-8828303ace924307816fda25dde8811c.pdf
- **Research Priority areas 2018-2023:** https://enterprise.gov.ie/en/Publications/Publication-files/Research-Priority-Areas-2018-to-2023.pdf
- **Climate Action Plan:** https://www.dccae.gov.ie/en-ie/climate-action/publications/Documents/16/Climate_Action_Plan_2019.pdf
- **Declaration on Public Service Innovation in Ireland:** https://ops2020.gov.ie/funds/declaration.html
- **The Department of Foreign Affairs and Trade Strategy 2020:** https://www.dfa.ie/media/dfa/alldfawebsitemedia/aboutus/DFAT-Statement-of-Strategy-2017-2020.pdf
- **The Department of Agriculture, Food and Marine, Agri food Strategy 2025** https://www.gov.ie/en/publication/a6b0d-food-wise-2025/
- **The Department of Health Strategy 2019:** https://assets.gov.ie/9641/63cece19d8be47cca0a24ca806aa65bc.pdf
- **Ireland's Industry 4.0 Strategy 2020-2025. Supporting the digital transformation of the manufacturing sector and its supply chain.** https://enterprise.gov.ie/en/Publications/Publication-files/Irelands-Industry-4-Strategy-2020-2025.pdf

International Plans

The United Nations Sustainable Development Goals 2030[23]**:** The Sustainable Development Goals (SDGs) address global challenges that affect humanity. The 17 SDGs are an ambitious set of targets to be achieved by all Member States by 2030, covering the social, economic and environmental requirements for a sustainable future. They include a broad set of goals from poverty eradication and economic development, to environmental protection and addressing climate change, to access to health and education services, and partnerships to achieve the Goals. Research funders and performers must play a key part in tackling the persistent and emerging grand challenges of our time. The achievement of many of the SDGs will depend heavily on scientific advances and in addressing cross cutting issues such as climate change, antimicrobial resistance and geopolitical risks that put the attainment of the SDGs in jeopardy. These goals are important for everyone, in every community across Ireland and the world. Building partnerships between research funders and performers, Governments, civil society organisations, enterprises and communities will be essential to achieving success in the SDGs. Partnerships, within and beyond Ireland, can solve these challenges using 'mission-oriented' or 'challenge-based' approaches.

Other international plans

- **United Nations Framework Convention on Climate Change and the Paris Agreement**
- **Horizon Europe** https://ec.europa.eu/info/horizon-europe_en
- **Horizon 2020** https://ec.europa.eu/programmes/horizon2020/en/official-documents
- **Implementing the pro-active management of the EIC pathfinder for breakthrough technologies & innovations** https://op.europa.eu/en/publication-detail/-/publication/fee3496e-23d0-11eb-b57e-01aa75ed71a1/language-en

Other SFI Strategies:

- **Gender Strategy 2016-2020:** https://www.sfi.ie/resources/SFI-Gender-Strategy-2016-2020.pdf

23 United Nations Sustainable Development Goals 2030 Agenda, Resolution A/RES/70/1 adopted by the General Assembly on 25 September 2015: https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

Science Foundation Ireland sfi For what's next

Rialtas na hÉireann
Government of Ireland