



INNOVATION

2020



Progress Report July 2016



Innovation 2020 2016 Progress Report

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Innovation in enterprise

Action No. 2.1	Research Prioritisation (RP) as basis for research investment in support of enterprise
Description	<p>a. Continue to target competitively-awarded research investment in support of enterprise towards the priority areas.</p> <p>b. Building on the accomplishments to date under RP, the 14 priority areas will be positioned within six themes: ICT, Manufacturing & Materials, Health and Medical, Food, Energy, and Services & Business Processes.</p>
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	DJEI, EI, IDA, SFI, DAFM, MI, Teagasc, IRC, HRB, DCENR, SEAI and other research funders
Progress Update	<p>Practically all of the research invited in DAFM's most recent Call (October 2015) under its 3 competitive research funding programmes (FIRM, Stimulus & CoFoRD) related to the areas prioritised under RP. Moreover, although intended to be undertaken by the Research Performing Organisations, much of the research arising from the 'regular' part of this Call will support enterprise albeit at arm's length. In addition, this Call also contained a new industry co-funded instrument (Innovation Platform) directed at 2 areas: Agri Data, ICT & Sensors and Biorefining.</p> <p>100% of Teagasc's Walsh Fellowships funded in 2016 were in two of the Research Prioritisation areas (Food for Health; Sustainable Food Production and Processing).</p> <p>In keeping with SFI's remit to fund research in strategic areas of opportunity for the State (the 14 Priority Areas), SFI has launched the following calls:</p> <ul style="list-style-type: none"> • 2016 Research Centres 2016 call: 27 applicants have prepared pre-proposals for the 28th April deadline; • The Future Research Leaders 2016 call: 38 Expressions of Interest were received by the 8th April 2016 deadline. SFI has invited 12 of these applicants to submit a full proposal by the full proposals deadline 19th August; • The Spokes programme is in place to facilitate and incentivise enterprise collaborations. In the 2016 SFI Centres Spokes call, 11 proposals were received by the 10th March deadline. These applications are now undergoing peer review. <p>Furthermore, three awards were made in the SFI-Pfizer Biotherapeutics Innovation award; these are in addition to the five awards made by the partnership in 2015.</p> <p>Targeting competitively-awarded research investment in support of enterprise</p>

towards the priority areas is currently part of the **IDA**'s strategy.

Through its employer and enterprise partnership portfolio, the **Irish Research Council** continues to specifically request applications aligned with or underpinning priority areas. DAFM and SEAI partner on the Employment Based Programme to deliver on RP objectives and possibilities for further strategic funding partnerships with other government departments and agencies are being explored.

Of the 14 priority areas identified in the Research Prioritisation exercise, two in particular are of primary relevance to the **Marine Institute** in its capacity as a research funder, *Marine Renewable Energy* and *Sustainable Food Production*. There are also related areas of relevance in relation to a number of the other priority areas including *Food for Health*, *Innovation in Services and Business Processes* and *Data Analytics*.

The focus of research investment by the Marine Institute is also informed by the report of the Development Task Force on achieving the targets of *Harnessing Our Ocean Wealth*. This report highlighted the need to “marinise” existing areas of strength for Ireland by focusing on marine related applications and markets, and reusing skills in such areas.

Through its involvement with the ERANet on Marine Biotechnology has just closed a call on “bio discovery – bioactive molecules from the marine environment”. This call sought research proposals on the use of biological materials obtained from fishery or aquaculture activity and marine biomass processing by-products and waste fractions, with a view to exploring the bioactivity for potential to provide compounds that offer chemical diversity and biological potency of value in meeting the needs of society. Over 20 applications were received from consortia with Irish partners. Evaluations of these proposals are currently being completed. Calls conducted under the ERANet in 2015 included successful consortia with strong SME participation.

The Institute has also committed funding to an ERANet co-fund that has been submitted to the European Commission under the latest Horizon 2020 work programme. This co-fund is being coordinated by JPI-Oceans and includes €20m in contributions from member states.

EPA-funded environmental research provides essential scientific support for national policy development, implementation and broader decision making. Where appropriate, the EPA collaborates with Enterprise Agencies in identifying innovative environmental solutions that could support the growth of the green economy. Research funding supports innovation in technology for environmental protection and industrial compliance, and also included supports to SMEs in relation to resource efficiency innovations and advancing of

	<p>sustainable competitiveness. A number of the Enterprise Agency staff and other practitioners are represented on a variety of relevant research project committees and are routinely apprised of potential commercialisation opportunities. In the past number of years a number of spin-out companies have been established primarily based on EPA research funding in the area of environmental monitoring sensors (Ambisense at DCU) and LCD recycling (Votechnik at UL).</p> <p>The HRB currently has a portfolio of active awards worth approximately €207m. Of these, 40% of investment is in the area of Research for Policy and Practice, 27% is in the area of Integrating Infrastructures (primarily clinical research infrastructure) and 23% is in the area of Platform Science and Technology. The remaining 10% of investment is spread across the priority research areas relevant to health (diagnostics, therapeutics – synthesis and formulation, food for health, connected health & independent living and medical devices.)</p>
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<p>Action No. 2.2 APJ ref 82</p> 	<p>Within the current cycle of RP, stimulate public research on Services and Business Processes and Manufacturing Competitiveness</p>
<p>Description</p>	<p>a. Increase capacity in the higher education sector by appointing a number of ‘star’ researchers with proven track records of solutions-driven research in Services and Business Processes and Manufacturing Competitiveness, in collaboration with global leaders in enterprise.</p> <p>b. Incorporate enterprise-relevant services and business processes challenges in the proposed new challenge-based funding system (see Action 4.3).</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016-2020 (APJ Q4 2016)</p>
<p>Lead Responsibility</p>	<p>a. HEIs, SFI b. SFI, IRC</p>
<p>Progress Update</p>	<p>a. Following international expert peer review, three offers have been made in the field of Manufacturing Competitiveness as part of the SFI Targeted Research Professorship programme in collaboration with the universities.</p> <p>b. SFI has analysed national and international challenge-based funding schemes in preparation to creating a new challenge-based funding programme.</p> <p>Through the Irish Research Council programmes, the number of projects in this area has slowly increased and in 2016 there are eighteen new research projects that could be considered as in this thematic area.</p>

Action No. 2.3 APJ ref 83  	Put in place new cycle of Research Prioritisation
Description	A market-led horizon-scanning exercise will be undertaken in order to identify strategic areas of commercial opportunity in global markets for Irish-based enterprises as the basis for the next cycle of RP, due in 2018. The exercise will take into consideration, inter alia, recent and likely future advances in science and technology, as well as the dynamics of international markets and global supply chains and policy developments.
Status	Initiated
Implementation Date	2017 - Initiate in 2016 (Q4)
Lead Responsibility	DJEI , research funders, enterprise development agencies, key stakeholders
Progress Update	DJEI have commenced the development of Terms of Reference for the three elements of the evidence base with a view to beginning work in 2016 with completion during 2017. Work within the three elements will involve members of the Innovation 2020 Implementation Group as appropriate including membership of the advisory groups to support each strand of work. DJEI will also engage with industry to ensure that future public investment will be targeted at areas of commercial opportunity.

Action No. 2.4 a APJ ref 84  	Optimising Enterprise RDI Supports
Description	We will review the full range of State financial aid for RDI, both direct and indirect (tax credits, Knowledge Development Box), in terms of the level of support available and eligibility rules, to ensure that the needs of small and young firms are being catered for as well as those of larger, established firm. The review will also assess the incentives available internationally to ensure that Ireland's offering remains competitive.
Status	Initiated
Implementation Date	2017 (Q4 2016 - APJ)
Lead Responsibility	DJEI , EI, IDA Ireland and other relevant funders
Progress Update	DJEI has established a project advisory group with members from the relevant funding agencies (DJEI, SFI, Enterprise Ireland, IDA and HEA/IRC) and Terms of

	Reference for the project were agreed at the first meeting. The overall aim of the action is to increase both the number of firms undertaking R&D and the R&D intensity of firms to achieve higher levels of Business Expenditure on R&D at a national level and the study will assess whether the current range of supports are optimally designed to support both that objective. DJEI is now gathering data on each of the funding programmes to get a better understanding of enterprise engagement with the supports and has issued a Request for Tender for consultants to complete the analysis, the consultation process and international benchmarking of supports. It is expected that the study will be complete in Q4 2016.
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Action No. 2.5 APJ ref 85 	Accessibility of enterprise research, development & innovation support
Description	A comprehensive and enterprise-friendly directory of all enterprise supports and programmes will be developed and disseminated. Allied with this, national and regional events will be organised periodically to showcase and promote these supports to enterprise.
Status	Initiated
Implementation Date	2016-2020 (APJ – ongoing)
Lead Responsibility	DJEI, EI/Knowledge Transfer Ireland, IDA, SFI, IRC, other stakeholders
Progress Update	<p>The Directory of Innovation Supports, Research Centres and Technology Centres 2016 was launched at the Innovation Showcase in December 2015. It has been disseminated widely and is available on the website of Knowledge Transfer Ireland and the websites of other research funding Government Departments and agencies.</p> <p>In addition to the Innovation Showcase event, other regional events at which innovation supports for enterprise are promoted have taken place and will continue to take place throughout 2016. This includes events organised by KTI and the funding agencies and/or events organised by industry representative groups, for example the Ibec Regional Insight Series¹, and other third parties at which the relevant agencies are represented.</p> <p>Funded by the IUA, DJEI and EU project funds, EURAXESS Ireland's Industry web resource is key in fostering industry academia collaboration. The portal brings together a number of important resources that companies can access directly</p>

¹ Ibec Regional Insight Series aims to explore how innovation can drive a company's performance. The series took place in May 2016 in Athlone, Wexford, Donegal, Cork, Limerick and Dublin

	<p>including the ability to:</p> <ul style="list-style-type: none"> • Search for R&D funding support opportunities • Access the fast track research visas system • Advertise vacancies • Search an online database of researcher CVs
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<p>Action No. 2.6 b, d & e APJ ref 97, 216, 88</p> 	<p>Optimise network of technology and research centres</p>
<p>Description</p>	<p>b. The network of Technology Gateways will be strengthened to ensure good geographical and technological coverage and to maximise enterprise engagement.</p> <p>d. The identified enterprise need for RTO support, particularly in the areas of Advanced Manufacturing and Services & Business Processes, will be addressed, building on the existing network of centres.</p> <p>e. We will develop standardised key performance indicators and associated targets for measuring and enhancing the impact of the Technology Gateways, Technology Centres and Research Centres, including enterprise co-funding and movement of researchers into enterprise.</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016-2020 (APJ - b Q3; d ongoing ; e Q4)</p>
<p>Lead Responsibility</p>	<p>b. EI, DES, HEA d. IDA, EI, SFI, HEIs e. DJEI, EI, IDA, SFI HEIs</p>
	<p>b. Since its inception in 2013 the Gateway Network has achieved significantly higher levels of interaction between industry and the IoTs than had been envisioned at the programme outset. To date, the Technology Gateways have completed a total of 956 industrial projects, at a value of €10.24 million, of which €4.85 million in cash (47%) was contributed from industry. Based on such positive results it was decided to launch a Call to expand the Network. As a result PEM (Precision Engineering) in IT Sligo, Atlantec (Biomedical engineering) & Design+ (Design Led Engineering) in IT Carlow have recently been established.</p> <p>2.6d – Discussions between DJEI and IDA Ireland, EI and SFI are underway aimed at responding to this enterprise need. These discussions include a review of a joint agency proposal for an Advanced Manufacturing Centre.</p> <p>2.6d - Following international expert peer review, three offers have been made in the field of Manufacturing Competitiveness in SFI's Targeted Research</p>

	<p>Professorship programme. The fixed call for the Research Centres Spokes programme incentivised advanced manufacturing applications through reduced required industry cash contributions; this resulted in three applications in the field of Advanced Manufacturing. A expression of interest in the field of financial services (specifically aircraft leasing) has been received in the strategic partnership programme.</p> <p>e. A standardised set of KPIs is used by SFI to assess the performance of SFI Research Centres with regular reporting by each Centre against targets including industry cash and industry in-kind contribution and the mobility of researchers to industry. Aggregated information is published by SFI through its annual report and other mechanisms.</p> <p>Similarly, Enterprise Ireland and IDA Ireland use a standardised set of KPIs to assess the performance of the Technology Centres that they support. Enterprise Ireland assesses the performance of Technology Gateways also on the basis of a consistent set of KPIs. The different roles and missions of Research Centres, Technology Centres and Technology Gateways are reflected in the KPIs that are used and reported on by the agencies concerned.</p>
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Action No. 2.8	Promote inter-disciplinary research
Description	Research funders will review their programmes to ensure that they incentivise and reward interdisciplinary collaboration.
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	Research funders
Progress Update	<p>As in previous years the Specification document of DAFM's most recent Call (October 2015) contained a Conceptual Framework which continued to emphasise the need for a multi-actor approach and the use of consortia comprising a variety of scientific and other disciplines in order to ensure an integrated holistic research effort that adds value along the entire chain from farm to fork as illustrated in the following extract:</p> <p>“Applicants should take note that some aspects are cross-sectoral or are applicable across the food chain whilst other elements are focussed on a single sector or research activity. The likelihood is, therefore, that, depending on the topic being addressed, a consortium comprising a mix of bioscience and other Science, Technology, Engineering and Mathematics and/or Humanities and Social Science type researchers may be required to fully address the issue. Applicants are strongly advised to take account of this aspect when forming their research project teams as this will certainly be considered as part of the evaluation process.”</p>

Teagasc hosts annual interdisciplinary workshops to encourage collaboration between the different disciplines in Teagasc. Research proposals arising from these workshops can then apply to the Teagasc Internal Funding call, which places a priority on interdisciplinary research.

Teagasc was a co-funder on the SFI 2015 Investigators Programme. To be eligible to apply under the Teagasc section of the Investigators Programme 2015, proposals had to involve collaboration between scientists from the agriculture and food disciplines and scientists from other scientific and engineering disciplines.

SFI's partnerships programmes incentivise interdisciplinary collaboration. Investigators Programme 2015 partnered with Marine Institute, Teagasc, Geological Survey of Ireland, the Department for Employment and Learning Northern Ireland, and the Environmental Protection Agency to stimulate interdisciplinary research proposals. This programme includes collaborations between the Arts, Humanities and Social Sciences and Science, Technology, Engineering and Maths disciplines in partnership with the Irish Research Council. 24 of a total of 35 fundable proposals have been funded. The Investigators Programme also stimulates Horizon 2020 applications, thereby promoting interdisciplinary research.

The **HEA** supports interdisciplinary collaboration through its core grant model. This helps researchers across disciplines and across institutions to collaborate with each other by providing platform support for research activity across the full spectrum of disciplines and Technology Readiness Levels.

The **EPA** primarily funds research projects following an open and competitive call. In specific cases where appropriate, the EPA funds a number of research projects that require interdisciplinary collaboration (e.g with Agriculture, forestry, energy sectors). Two projects co-funded with HSE will support the Healthy Ireland initiative.

The **Irish Research Council** is supporting interdisciplinary projects in 2016 through its dedicated New Horizons IDR programme. It is also cultivating interdisciplinarity by supporting a number of inter-institutional workshops. The Council is also assisting and supporting the Horizon 2020 National Contact Point network to ensure that Irish teams incubating proposals to Horizon 2020 Societal Challenges and Leadership in Enabling and Industrial Technologies develop connections to Social Science and Humanities researchers.

Through its funding schemes the **HRB** is supporting interdisciplinary research and the development and enhancement of capacity in this area. For example

- Ongoing support for the HRB Interdisciplinary Capacity Enhancement

	<p>Awards (ICE) scheme for postdoctoral researchers in population health and health services research (commitment of almost €7M)</p> <ul style="list-style-type: none"> • Under the HRB Strategy 2016-2020 Research Evidence Action, the HRB will expand the ICE scheme (or develop a similar instrument) to include patient-oriented research and/or translational medicine. • The SPHeRE PhD Programme places a strong emphasis on inter- and multi-disciplinarily in the training of future researchers in population health science and health services research (commitment of over €25M) • The HRB Collaborative Applied Research Grants (CARG) have a strong inter- and multi-disciplinarily focus (commitment of almost €4.8M) • The HRB has just launched a new Applied Partnership Programme which will require co-management of research projects by an academic and policy/health system PI to address research questions that are relevant and translatable in the policy/health system. <p>Under its new Strategy 2016-2020 <i>Research Evidence Action</i>, the HRB is working with higher education institutions and the health system to establish an Emerging Investigator Scheme that will enable mid-career researchers to advance to senior investigator level and become independent researchers.</p> <p>Promoting collaboration & inter-disciplinary research is identified in the 2015 - 2019 IDA strategy.</p> <p>By its nature, and as reflected in Innovation 2020 through its inclusion as an area for focus under social progress and the economy, marine is by definition an interdisciplinary domain. Implementation of the National Marine Research and Innovation Strategy (Action 4.17) will include utilising inter-disciplinary projects to bring currently un-marine focused research centres into collaborations with existing centres of marine expertise.</p>
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<p>Action No. 2.10 APJ ref 144 - 152</p> 	<p>Access to finance</p>
<p>Description</p>	<p>Implement the 'Finance for Growth' actions in Enterprise 2025 to ensure the availability of a comprehensive and competitive range of financial services to meet the needs of innovative enterprises.</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016-2020</p>
<p>Lead Responsibility</p>	<p>DJEI, DPER, DOF, EI</p>
<p>Progress Update</p>	<p>Key initiatives being progressed to deliver the Finance for Growth actions in Enterprise Policy 2025 and the Action Plan for Jobs, include:</p>

	<ul style="list-style-type: none"> • The Strategic Banking Corporation of Ireland (SBCI) operates as a wholesale lending institution. €791 million of the SBCI's initial €800 million fund has already been made available via committed financing facilities, through AIB, Bank of Ireland, Finance Ireland, Merrion Fleet, Ulsterbank and First Citizen across a range of different lending products. These funds are being drawn down by SMEs over time as they seek finance from these front line providers. The SBCI is in the process of sourcing further funding to service its pipeline of new on-lending institutions; • The Ireland Strategic Investment Fund will operate as a sovereign development fund with the capacity to invest over €7.6 billion; • Enterprise Ireland's Seed and Venture Capital Scheme (2013-2018) to leverage private capital and to act as a catalyst to create new Seed and Venture Capital Funds to support innovative start-up and growth companies to scale and create jobs; • The continued funding and reshaping by Enterprise Ireland and InterTrade Ireland of the HALO Business Angels Network which actively works to increase the number of individual angel investors and investment syndicates interested in investing in early stage Irish companies; • The establishment by Enterprise Ireland of the €20 million European Investment Fund's European Angels Fund to increase the availability of capital for investment in early stage companies and the Development Capital Scheme focused on investing in medium sized ones; • There have been recent improvements in the Microfinance Fund operated through Microfinance Ireland. To date, approximately €13 million has been loaned to 870 firms with more than 2000 jobs being created/maintained. The operation of MFI was reviewed in 2015, and a number of changes were made to ease access to loans primarily, via the removal of the previous pre-requisite of a bank loan rejection. The legislative changes have resulted in a substantial increase in the activities both nationally and regionally from start 2015 to end Q1 of 2016. • The Credit Guarantee (Amendment) Act 2016 was signed into law earlier this year. Work is ongoing with the Department of Finance and the SBCI on developing and finalising new Schemes which will extend the remit of credit guarantees (covering expanded forms of lending, and greater risk sharing by the State), and introduce new counter guarantees (to enhance the provision of both State and EU sourced finance) for Irish SMEs; and • The 'Supporting SMEs' online tool provides access to information on over 80 Government business supports across over 30 Departments.
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Action No. 2.11 APJ ref 89 	Increase collaboration within the public research system
Description	<p>a. Research funders will review their programmes to ensure that they incentivise and reward collaboration between researchers, institutions and centres.</p> <p>b. Clusters of research centres with complementary research agendas will be identified and incentivised to collaborate for greater overall impact.</p>
Status	Initiated
Implementation Date	2016 – 2020
Lead Responsibility	<p>a. Implementation Group Q4 2016</p> <p>b. SFI, EI ongoing</p>
Progress Update	<p>a. The majority of SFI's programmes incentivise and reward collaboration. These programmes include Research Centres, Investigators Programme, Spokes, and Strategic Partnerships. In particular, many of SFI's Research Centres are multi-institutional and multi-researcher collaborations. Investigators Programme 2015 partnered with Marine Institute, Teagasc, Geological Survey of Ireland, the Department for Employment and Learning Northern Ireland, and the Environmental Protection Agency to stimulate interdisciplinary research proposals. This programme includes collaborations between the Arts, Humanities and Social Sciences and Science, Technology, Engineering and Maths disciplines in partnership with the Irish Research Council. 24 of these proposals have been funded. There are 11 excellent and impactful proposals for which SFI does not have budget; these are currently on a reserve list. The Investigators Programme also stimulates Horizon 2020 applications.</p> <p>As in previous years the Specification document of DAFM's most recent Call (October 2015) strongly encouraged applications with inter-institutional collaboration and contained an explicit requirement that applications in the budget range €600,000 to €3m must comprise a minimum of between 2 and 4 RPOs on a sliding scale with each accounting for at least 10% of the grant requested.</p> <p>All Teagasc competitive funding requires collaboration between researchers, institutions and centres. The Walsh Fellowship Programme requires co-supervision of students between a University supervisor and a Teagasc supervisor. The Teagasc co-funded element of SFI's Investigator Programme 2015 required a collaboration between a Teagasc staff member and a non-Teagasc staff member (i.e., from another SFI-eligible institution). The ERA-NETs which are funded by Teagasc and DAFM (e.g., ICT-AGRI, SusAn and ERA-GAS)</p>

require at least two Irish research performing organisations to be involved in the application.

The **HEA** supports collaboration through its core grant model. This helps researchers across institutions and their respective centres to collaborate with each other by providing platform support for research activity across the full spectrum of disciplines and Technology Readiness Levels.

The HEA is also encouraging inter-institutional collaboration through the establishment of regional clusters of institutions across Ireland. As part of the implementation of the National Strategy for Higher Education to 2030, it is intended that these will help meet the needs of the wide range of students, communities and enterprises in each region.

The **Irish Research Council** in 2015 partnered with 13 Government Departments and agencies primarily through its Research for Policy and Society Programme and through Government agencies sponsoring capacity development in postgraduate student and postdoctorate programmes. Co-funding partners included DAFM, DCYA, DFAT, DSP, DES, DAHG, HEA, HSE, National Forum for Teaching & Learning, SEAI, SFI, Tusla and Teagasc.

In specific cases where appropriate, the **EPA** funds a number of research projects that require interdisciplinary collaboration (e.g with Agriculture, forestry, energy sectors). In 2015, the EPA together with the HSE funded two research projects looking at the benefits to health of a clean environment. The EPA also participated as a co-funder under the SFI Investigators programme and the IRC government of Ireland scholarship award (2015).

HRB continues to sustain existing and develop new co-funding initiatives where appropriate. Recent examples include:

- HRB partnerships with other funding agencies including SFI, DAFM, National Institutes for Health USA, National Cancer Institute USA and Wellcome Trust.
- A joint-funding initiative on dementia with Atlantic Philanthropies was launched in 2014, with further calls in 2015.
- The joint-funding initiative with Irish Medical Research Charities (MRCG Co-fund Scheme) is currently in its 8th round, having funded 95 projects with up to the €300,000 each previously. It was revised recently to facilitate the participation of smaller charities
- In 2016 the HRB launched an innovative Applied Research Partnership programme to link academic and clinical researchers with decision makers/ health managers/ practitioners/ NGOs and the business sector. Not only will this initiative ensure that research evidence can be translated into policy and clinical practice, but it creates opportunities

	<p>for health and policy professionals to engage in research as part of their everyday work</p> <p>IDA's strategy identifies the promotion of collaboration & inter-disciplinary research.</p> <p>The Marine Institute has operated a number of co-fund exercises with other agencies, in particular with Science Foundation Ireland through the Investigators Programme. The Institute will continue to promote collaborative research programmes through the implementation of the National Marine Research and Innovation Strategy (Action 4.17). A co-fund with SFI Investigators programme has just been awarded, and a new call in 2016 is planned.</p> <p>b. SFI's Spokes programme is in place to facilitate and incentivise collaborations for greater overall impact. In the 2016 SFI Centres Spokes call, 11 proposals were received by the 10th March deadline. Four of these 11 are Centre-to-Centre collaborations. These applications are now undergoing peer review. The SFI US- Ireland R&D Partnership Programme has recently funded an award with participation from the SFI Research Centres Connect and IPIC, in addition to partner Centres in Northern Ireland and the USA. Three of the SFI Research Centres ADAPT, AMBER, and CONNECT are to receive €6m in Horizon 2020 EU funding for a new postdoctoral programme, EDGE. This award was made under the EU's Marie Skłodowska Curie Cofund programme and is the single biggest award for Trinity College Dublin in Horizon 2020.</p>
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<p>Action No. 2.12 b&c APJ ref 91</p> 	<p>Increase collaboration between firms and the public research system</p>
<p>Description</p>	<p>b. Expand the SFI Strategic Partnership and SFI Centres Spokes programme for adding new industrial and academic partners to the SFI Research Centres.</p> <p>c. Increase the use of the EI Innovation Partnership scheme to drive market-led collaboration between firms and the public research system.</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016-2020 Q4 2016</p>
<p>Lead Responsibility</p>	<p>SFI, HEIs EI/Knowledge Transfer Ireland,</p>
<p>Progress Update</p>	<p>b. The SFI Strategic Partnership programme call is open. Five applications are currently under review; four Expressions of Interest are to be submitted. The SFI Centres Spokes programme is active: 11 proposals were received by the</p>

	<p>10th March deadline for the 2016 call. These applications are now undergoing peer review.</p> <p>c. Enterprise Ireland are continuing to drive the Innovation Partnership scheme to encourage market-led collaboration between firms and the public research system so that companies can access expertise and resources to develop new and improved products, processes and services, and generate new knowledge.</p>
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Education for innovation

<p>Action No. 3.2 a APJ ref 64</p>   <p>European Research Area</p>	<p>Further scale initiatives to encourage young people and the wider population to participate in STEM disciplines and engage the broader Irish public in STEM.</p>
<p>Description</p>	<p>Increase support for the Smart Futures and SFI Discover programmes and build on success of initiatives including Student Enterprise Awards, CoderDojo, Science Week Ireland, BT Young Scientist.</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016 – 2020 Q4 2016</p>
<p>Lead Responsibility</p>	<p>SFI, DES, HEA, with other funders, stakeholders and co-sponsors</p>
<p>Progress Update</p>	<p>SFI's Smart Futures has delivered nine volunteer training sessions to-date in 2016, representing 100+ new volunteers. Training requests have been received from Google, Twitter, HPE, Zurich, Boston Scientific (Cork), and IBM. Smart Futures connected with approx. 800 Transition Year students at Students Slingshot Academy events in Dublin, Cork and Limerick. Sponsorship opportunities are being reviewed for Coder Dojo Coolest Projects (RDS, June). 637 primary schools registered for SFI Discover Science and Maths Awards. The SFI 2016 Discover Programme Call was launched in April 2016. Eureka – The Big Bang Query which was funded under the Discover Programme Call 2014 commenced broadcasting on Monday, 14 March 2016 on RTÉ Two. Initial reviews are very positive. The Big Week on the Farm programme which was funded under the SFI/RTE Joint Initiative was broadcast live every day from the 4th – 8th April on RTÉ 1 from 7pm – 8pm.</p> <p>The EPA has developed several education resources, including games and teaching resource packs. The materials are being used by teachers at primary and second level to teach specific areas of the curriculum and raise environmental awareness generally. All our education materials are available through Irish and English, and are developed in close consultation with Irish schools, using Irish data and closely linking them to the primary and second level school curriculum (http://www.epa.ie/researchandeducation/education/). Primary Schools Resource Pack Leaving Certificate Geography Pack 2020 Visions resource pack for secondary level. The EPA also contributes a lesson to the Science and Technology in Action secondary school pack, developed by AG Education Services (www.sta.ie). The EPA also encourages staff to visit schools in the locations where we have offices – to present to students about the work of the EPA, and current information on their local environment. The EPA also regularly host stands at environmental conferences; educational events and</p>

	<p>workplace environmental awareness days. The EPA has worked very closely with An Taisce on the Green Home programme and are currently working with Junior Achievement Ireland to deliver their programme to schools in Wexford and Castlebar.</p> <p>The EPA has also provided funding to a variety of radio and TV programmes featuring issues of environmental interest including Eco Eye; The Investigators and Science Squad. And we sponsor several initiatives including the Eco Unesco Young Environmentalist Awards and The BT Young Scientist Awards.</p>
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<p>Action No. 3.4</p>  <p>European Research Area</p>	<p>Ensure that world-class standards apply to the quality of postgraduate researcher education and training</p>
<p>Description</p>	<p>Advance and ensure quality postgraduate research education provision in Ireland through the implementation of the National Framework for Doctoral Education incorporating modules on entrepreneurship, IP management etc.</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016-2020</p>
<p>Lead Responsibility</p>	<p>HEA & QQI with HEIs</p>
<p>Progress Update</p>	<p>The National Framework for Doctoral Education sets out key principles for doctoral education in Ireland. Launched in 2015, it has been signed up to by all institutions and the research funding agencies. In the next step of its implementation, QQI has carried out a review of the national guidelines for the quality assurance of research degree provision in Ireland's higher education institutions. The report of the expert panel was recently completed and QQI are now launching the consultation phase for the development of quality assurance guidelines for research degree programmes. The next phase involves the development of statutory quality assurance guidelines for research degrees which will involve consultation with stakeholders.</p>

<p>Action No. 3.5</p>  <p>European Research Area</p>	<p>Increase enrolment of postgraduate researchers to address demand in the economy</p>
<p>Description</p>	<p>Increase research masters and Ph.D. enrolments from 1,750 in 2015 to 2,250 in disciplines aligned to enterprise and other national needs.</p>
<p>Status</p>	<p>Initiated</p>

Implementation Date	2020
Lead Responsibility	IRC, SFI, other funding agencies as appropriate
Progress Update	<p>Development work has been carried out by SFI and the Irish Research Council on this action.</p> <p>SFI is planning a new four year PhD studentship programme, based in the SFI Research Centres, attracting new supervisors to work in collaboration with the Research Centres.</p> <p>The Irish Research Council has approved in principle the future increase of awards through its enterprise/employer co-funding programmes and through its Government of Ireland Scholar Programme. To deliver on the increase a new strategy will, in the first instance, be adopted for the enterprise/employer co-funding programme calls in 2016/2017. Applications will be accepted directly from prospective students (supported by a PI and enterprise) as is currently the case but applications to support small cohorts of co-funded Masters and PhD students will also be facilitated.</p> <p>There are currently over 100 full time researchers (Post-Doc, PhD, Masters) working on EPA funded research projects.</p>

Action No. 3.6	Address gaps in the funding system for post-doctoral researchers through competitive support for excellent research across all disciplines and with a particular focus on inter-disciplinary research.
Description	Deliver a 30% increase in the number of funded post-doctoral places in order to support the generation of future research talent and to maximise the take-up by industry of qualified researchers from the HE sector
Status	Initiated
Implementation Date	2020
Lead Responsibility	SFI, IRC, Other Research Funders
Progress Update	<p>Development work has been carried out by SFI and the Irish Research Council.</p> <p>SFI will continue to fund new post-doctoral places through its new awards such as Investigators Programme 2015 and SIRG (Starting Investigator Research Grant); SFI will continue to fund the existing cohort of postdocs on ongoing awards such as the Investigators Programme and Research Centres.</p> <p>A new Marie Sklowdaska-Curie COFUND Postdoc Fellow programme – CAROLINE – will be launched by the Irish Research Council in September 2016. Furthermore, the IRC will increase by 30% the number of postdoc awards it makes across its funding programmes in 2017. There will be a particular focus on increasing awards under the Enterprise Partnership Scheme.</p>

	HRB continues to invest in post-doctoral research capability at trainee, fellow and senior fellow levels across all health disciplines through a number of funding instruments and senior research leadership capability as a partnership between the university sector and the health system.
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Action No. 3.7 b APJ ref 103  	Ensure continued opportunities for researcher career development in areas of strategic importance
Description	Increase the number of early- and mid-career independent researcher awards by doubling the number of awards (Starting Investigator Research Grant and Career Development Award) from 20 to 40 per annum to enable formation of the next generation of Principal Investigators and ensure a vibrant research ecosystem
Status	Initiated
Implementation Date	2020 Q4 2016 (funding decision)
Lead Responsibility	SFI, HEIs, HEA
Progress Update	SFI has received 93 SIRG applications which are out for international expert peer review. 117 CDA applications are also out for international expert peer review. International peer review panels took place in May and June.

Action No 3.8	Institute a new programme of funding for frontier research across all disciplines
Description	Establish a new competitive fund to enable the next generation of researchers transition to Principal Investigator status and enable the research community in Ireland to be competitive internationally.
Status	Initiated
Implementation Date	2017
Lead Responsibility	IRC
Progress Update	The Irish Research Council has carried out development work to prepare for this action. Further to the examination of international funding opportunities for the research community and further to an examination of best practice for the funding of frontiers research, a strategy for the roll out of this programme has been adopted. Parameters and proposals for implementation are being scoped out.

<p>Action No. 3.9 a APJ ref 76</p> 	<p>Attract world-leading research professors and future research leaders to Ireland to address gaps in particular areas of priority</p>
<p>Description</p>	<p>Scale up both Research Professor and Future Research Leaders awards by an additional 3-5 to 10 per annum to address gaps in priority areas of research where Ireland needs to strengthen its research capacity.</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2020 (APJ Q4 2016 for 3 Research Professorships)</p>
<p>Lead Responsibility</p>	<p>SFI, HEIs</p>
<p>Progress Update</p>	<p>In SFI's Research Professorship Programme, six offers have been made following international expert peer review; one additional offer has been made but has since been declined by the applicant; and three applications are under review. The Future Research Leaders 2016 call has been launched: 38 Expressions of Interest were received by the 8th April 2016 deadline; has invited 12 of these applicants to submit a full proposal by the full proposal deadline Aug 19th.</p>

<p>Action No. 3.10</p> 	<p>Develop a coherent national policy on structured progression for researchers</p>
<p>Description</p>	<p>Identify and tackle impediments to career progression and mobility of trained researchers and innovators in the publicly funded research system by developing a coherent national policy on structured progression for researchers</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016-2020</p>
<p>Lead Responsibility</p>	<p>DES with DJEI and relevant stakeholders</p>
<p>Progress Update</p>	<p>Human capital is a critical factor in reaping economic and social rewards from investment in research. A comprehensive and coherent framework for researcher careers is needed to bring greater clarity and certainty to the career structure and to provide researchers with developmental opportunities to enhance their skills and employability, both with academia and the wider economy. The Irish Universities Association has been working to develop a draft framework to address these issues and is now ready to bring forward proposals in consultation with policy makers and funders. The successful implementation of a national framework requires that all stakeholders are aligned with the overall policy, and that the policies, processes, practices and budgetary decisions of stakeholders support the central policy objective of optimising the impact of the human capital developed in our research system.</p>

<p>Action No. 3.12 a b & APJ ref 107 & 108 for Action a</p>  	<p>Ensure the mobility of researchers between academia and industry</p>
<p>Description</p>	<ul style="list-style-type: none"> a. Enhance existing support for the bilateral flow of researchers between academia and industry by increasing awards including under the SFI Industry Fellowship Programme, the IRC Employment-based Postgraduate Programme and the IRC Enterprise Partnership Programme b. Increase the share of PhD researchers transferring from SFI research teams to industry from 25% in 2014 to 35% by 2020 d. Continue support for the EURAXESS Ireland Office
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016-2020</p>
<p>Lead Responsibility</p>	<ul style="list-style-type: none"> a. SFI, IRC, other funders Q3 2016 Fellows; Q2 EP Scheme launch b. SFI d. DJEI, IUA
<p>Progress Update</p>	<ul style="list-style-type: none"> a. Under SFI's Industry Fellowship programme, 21 proposals from the December 2015 call deadline were funded to a total value of €1.2m. The 2016 Industry Fellowships call has been launched. <p>The Irish Research Council has adopted a target to maintain a minimum of 25% of total Masters and PhD awards through its funding to be through the enterprise/employer partner programmes. Mobility between academia and enterprise being embedded in these programmes.</p> <ul style="list-style-type: none"> c. DJEI facilitates the mobility of researchers through its continued support for the EURAXESS Ireland Office operated by the Irish Universities Association (IUA). The Hosting Agreement Scheme which facilitates research organisations (including HEIs and firms) in hiring researchers from outside of the EU is implemented and promoted by DJEI and the IUA. As of May 2016, 55 Organisations in Ireland were participating in the scheme, hosting 641 researchers from 75 different countries.
<p>Action No. 3.14 APJ ref 92</p>	<p>Address barriers to pension portability that can restrict researcher mobility</p>

 	
Description	Explore possibility of higher education institution and other RPO participation in the EU RESAVER pension scheme
Status	Initiated
Implementation Date	2016 Q4 2016
Lead Responsibility	DES, HEA, HEIs, RPOs
Progress Update	The European Commission is supporting a consortium of employers, through Horizon 2020, in creating a single European pension arrangement (RESAVER) that will offer a defined contribution plan for research organisations and their employees. AON Hewitt were awarded the contract. DES are to explore mechanics/feasibility of an institution joining the Scheme.

Action No. 3.15 	Address gender issues relating to career progression in research and innovation
Description	Engage fully with the Athena Swan initiative. Implement the relevant recommendations emerging from the HEA National Review of Gender Equality in Irish Higher Education
Status	Initiated
Implementation Date	2016 - 2020
Lead Responsibility	DES, HEA, funding agencies
Progress Update	<p>The HEA, with the higher education sector, are engaging actively with the Athena Swan initiative on addressing gender inequality.</p> <p>The HEA Review of Gender Equality in Higher Education was published 27th June 2016. The Expert Group, chaired by former European Commissioner Máire Geoghan-Quinn sets; objectives, recommendations, proposed timings and key performance indicators for all relevant stakeholders in the higher education sector. One key recommendation identified is that Higher Education Institutions will risk funding penalties if they fail to address gender inequality sufficiently. A meeting of key stakeholders will be held in the Autumn of 2016 to discuss progressing and implementing this report.</p> <p>SFI took a number of steps to increase female international peer reviewers and award holders. Adjustments to the caps on the numbers of applications to the Starting Investigator Research Grants (SIRG) 2015 saw female applicants</p>

	<p>increase from 27% to 46%. All of SFI staff have undergone unconscious bias training; this training will be rolled out to SFI's international peer reviewers. #</p> <p>The Irish Research Council expanded its strategy to gender-blind assessment of funding awards. The introduction of gender-blind assessment for the Irish Research Council's 2014 and 2015 calls for STEM postdoctoral schemes significantly increased the percentage of awards given to women. When the assessment was not anonymised in 2013, women represented only 35 per cent of awardees in comparison to 43 per cent of applicants. After the applications were anonymised, the number of women receiving awards rose to 44 per cent in 2014 and 45 per cent in 2015.</p>
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<p>Action No. 3.16 APJ ref 93</p>   <p>European Research Area</p>	<p>Ensure a strategic approach to the development of existing and new research infrastructure programmes</p>
<p>Description</p>	<p>a. Scope out and develop a successor to PRTL I to support new investment in research infrastructure in the wider research base and to allow for maintenance and upgrading of existing facilities and equipment.</p> <p>b. Review and optimise roll out of policies for accessing research infrastructure including policies to maximise enterprise use of, and partnerships in, research infrastructure.</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016 Q4 2016</p>
<p>Lead Responsibility</p>	<p>a. DJEI, DES, SFI, HEA with other departments and funders, HEIs, enterprise agencies and other stakeholders</p> <p>b. HEA, HEIs, Research Funders</p>
<p>Progress Update</p>	<p>a. DJEI has commenced work internally on scoping out the parameters of Cycle 6 of the PRTL I. DJEI will produce a discussion paper and will commence consultation with key stakeholders in Q2.</p> <p>b. To optimise infrastructure access (and related policies), the HEA is engaging a service provider to upgrade the LIRE database to a managed online system to which institutions will have access. Institutions will be required to regularly update the database and confirm (on an annual basis through governance statements) that the system is updated regularly.</p>

Innovation for social progress and the economy

Action No. 4.1 a  <small>European Research Area</small>	Address public policy needs and optimal use of research
Description	Government departments will: a. ensure that they are making best use of scientific evidence in the execution of their mission and address gaps where they arise.
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	All Government departments
Progress Update	As part of the AO Development Programme, this action has been selected for inclusion in training being provided for project management. DJEI are sponsoring the project.

Action No. 4.2	Ensure R&D expenditure is afforded a sufficiently high priority in Government department budgets
Description	Make business case through annual Estimates process to secure funding and report to the Cabinet Committee (through 2020 Implementation Group) on increased investment levels to contribute to impact and the 2.5% target for investment.
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	All Government departments
Progress Update	The Innovation 2020 Progress Report 2016 will be brought to Cabinet in advance of the Estimates 2017 Estimate.

Action No. 4.3 APJ ref 23 & 109   <small>European Research Area</small>	Address global and national societal challenges
Description	Explore potential for competitive funding mechanism aimed at stimulating solutions-driven collaborations; engage the civic community and enterprise in identifying the grand challenges.
Status	Initiated

Implementation Date	2016-2020 (APJ Q4 2016 IRC action)
Lead Responsibility	All Government departments and agencies
Progress Update	To inform the 2016 Research for Policy and Society Programme of the Irish Research Council , a consultation to identify national societal challenges and areas of interest for research for government entities and civic society groups will be initiated (end Q2). This work would also feed into wider discussions. A Research for Policy and Society call will launch in Q4.

Action No. 4.4  <small>European Research Area</small>	Strengthen public policy and societal impact
Description	Target supports to cultivate interdisciplinary research; increase the engagement of public entities and civic society in public policy and societal challenge-based research
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	IRC, HRB
Progress Update	<p>The Irish Research Council, in partnership with Dochas, announced 22 awards for small projects in partnership with international development civic society groups in March 2016. A further 16 awards were made which will enable a broad range of civic society groups to prepare for applications to Horizon 2020. The Council is also commissioning a piece of work to identify a small number of key areas aligned with the strengths/missions of Irish civic society, and from which will emerge a joint academia-civic society strategic proposal to Horizon2020 in 2017.</p> <p>In Q1, the IRC also secured funded from the H2020 Marie Slowdawska- Curie COFUND for a programme (CAROLINE - Collaborative Research Fellowships for a Responsive & Innovative Europe). This initiative will partner with national and international NGO/IGO organisations.</p> <p>Further to a consultation with government entities and civic society groups (see Action 4.3), the 2016 Research for Policy and Society Programme of the Irish Research Council call will launch in Q4.</p> <p>Through its funding schemes the HRB is supporting interdisciplinary research and the development and enhancement of Patient and Public Involvement. For example:</p> <ul style="list-style-type: none"> • The HRB Collaborative Applied Research Grants (CARG) have a strong inter- and multi-disciplinarily focus (commitment of almost €4.8M)

- The HRB has just launched a new Applied Partnership Programme which will require co-management of research projects by an academic and policy/health system PI to address research questions that are relevant and translatable in the policy/health system.
- In the area of health information, the HRB currently manages five national health information systems that were established at the request of the Department of Health (and, in the case of one system, the Department of Justice and Equality) to meet specific needs in the areas of drugs, disability, and mental health. The HRB systems are specifically included in a number of national strategies and policy documents.
- The HRB is providing an evidence synthesis and review service to the Department of Health to ensure that policy development is underpinned by the most recent research evidence and thinking. There are plans to expand this service to the health services
- The HRB is currently working with the Department of Health to develop a Collaboration in Ireland for Clinical Effectiveness Reviews to ensure that national clinical guideline development is based on the best evidence.
- The HRB has just completed a survey on enablers and barriers to Public and Patient Involvement in health research and is developing recommendations to move this area forward over the coming years.

The **EPA** funds a number of initiatives promoting civic society engagements under the Research and Green Enterprise programmes (e.g. (i) Community Involvement in Water Management in Co. Cork, (ii) Climate Information Portal for Ireland, (iii) sustainable campus communities (iv) Community reuse network which is an all-island network for community re-use, recycling and waste prevention organisations).

A recently awarded project under a EPA-HSE research initiative involves collaboration with policymakers, practitioners and communities and other stakeholders to explore the types and qualities of public spaces that can be used in the design and implementation of inclusive nature-based solutions to assist communities to attain, maintain and restore health. In this way it meets research needs of the EPA, HSE and goals of Healthy Ireland

In addition, the EPA is on the management committee for COST Action CA15212: Citizen Science to promote creativity, scientific literacy, and innovation throughout Europe.

Action No. 4.5 b APJ ref 98 (SBIR) 	Support collaboration across sectors (public and private) to deliver social policy objectives
Description	<p>Examine potential areas for collaboration across Government departments and agencies.</p> <p>Explore SBIR potential in relevant sectors including health.</p>
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	Research funding Government departments and agencies
Progress Update	<p>Following on from the successful SBIR projects to date, Enterprise Ireland have initiated a process to identify further potential SBIR projects.</p> <p>Under the Green Enterprise programme, the EPA has funded a number of projects to “social enterprises” in the area of resource efficiency in the past number of years.</p>

Action No. 4.8 APJ ref 112 (CRFs) 	Support a conducive environment for health research in Ireland
Description	Continue the development of a coordinated approach to research management in the health system.
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	Department of Health
Progress Update	<p>In terms of clinical research infrastructure:</p> <ul style="list-style-type: none"> • All HRB-funded Clinical Research Facilities (CRFs) - located at St. James Dublin, UCH Galway and UCH Cork in collaboration with the partner university - are now fully functional and conducting both PI-led and industry-sponsored clinical trials and intervention studies. The CRFs support clinical studies and interventions from design and regulatory compliance, through the accrual and follow-up phase, to data management. CRFs now enable many projects to be conducted in a safe and high-quality environment – projects that would previously not have been feasible. • The HRB Clinical Research Co-ordination Ireland (HRB-CRCI) has now been established to coordinate of the running of multi-site clinical trials

	<p>in CRFs and CRCs nationally and with international partners and to facilitate industry linkage with the CRF network.</p> <ul style="list-style-type: none"> • The CRFs and CRCI are part of the infrastructure that supports the recently established national Health Innovation Hub. • The HRB, in its Strategy 2016-2020 Research Evidence Action has placed focus on support for PI-led clinical trials and interventions and is developing a new suite of calls in this area. • The HRB supported ICORG cancer clinical trials network continues to establish industry-sponsored clinical trials in Ireland. A contract for continued funding of ICORG, and the funding of a number of other Clinical Trials Networks is in place, complemented by support for a Trials Methodology Research Network. This Network has been established to facilitate capacity for complex interventions and new trials methodology development in Ireland. • Four new networks for clinical trials in perinatal care, stroke, general practice and critical illness have been set up, who have a remit to also carry out commercial trials. A number of additional clinical trials networks will be supported in the coming years. <p>HRB investment in projects, programmes and centres are providing the evidence in:</p> <ul style="list-style-type: none"> • Health Services Research to improve the uptake of healthcare innovations in the system, and is providing evidence about the quality, cost and implementation of healthcare interventions in the health system. ▪ Population Health Sciences Research to enhance our understanding of the needs, behaviours and lifestyle of specific populations groups (e.g. older people, people with disabilities). ▪ Clinical research to develop more effective preventative strategies, better care practices and treatments and more sensitive models of care. <p>The EPA, together with the HSE, has co-funded two research projects that will support the Healthy Ireland initiative.</p>
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Action No. 4.9	Support exceptional researchers, talent and leadership in health research and build a strong enabling environment for Irish health research, nationally and internationally.
Description	<p>a. Support innovative, investigator-led and internationally competitive research to address major health challenges</p> <p>b. Support the conduct and evaluation of healthcare intervention studies in order to improve health outcomes and health service delivery</p> <p>c. Support partnership-driven research, information and evidence that meet the needs of the Irish health and social care system.</p>

	d. Support exceptional research, talent and leadership in health research. e. Build a strong enabling environment for Irish health research nationally and internationally
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	Health Research Board
Progress Update	<p>Over the next five years, the HRB will:</p> <ul style="list-style-type: none"> • develop new and innovative partnerships and collaborations in areas such as patient safety and quality, chronic disease management, quality improvement, health and wellbeing, data infrastructure and evidence synthesis and guideline development • continue to focus on those areas and activities with the greatest potential to bring benefits to patients and the Irish population • consolidate and build on progress in constructing a coherent and integrated clinical research infrastructure nationally (including facilities, equipment, coordination, research support, and networks) • seek to enhance data environments, and increase the capacity for high-quality patient oriented, clinical, population health, and health services research • work with partners nationally and internationally to ensure that the important area of biomedical research continues to be adequately supported. • encourage greater levels of user involvement in the design and conduct of research activities, and engage in more effective knowledge exchange and dissemination activities that will influence decision-making, adoption and/or scale-up of healthcare interventions • streamline HRB national health information systems and the secondary analysis of their data will be supported. <p>Initiatives to enable these actions are in development or already underway and are described in Actions 2.1, 2.8, 2.11.a and 4.4.</p>

Action No. 4.10 a APJ ref 94 	Support collaboration between the health system and enterprise leading to development and commercialisation of new healthcare technologies and to facilitate the health system to find efficiencies and improvements.
Description	Establish a national Health Innovation Hub Ireland (HIHI).
Status	Complete
Implementation Date	2016
Lead Responsibility	DJEI, Department of Health

Progress Update	<p>Health Innovation Hub Ireland was announced by the Minister for Jobs, Enterprise & Innovation and the Minister for Health on 26 January 2016. The aim of Health Innovation Hub Ireland is to drive collaboration between the health service and enterprise providing gains to the health and enterprise sectors by:</p> <ul style="list-style-type: none"> • Facilitating enterprise to develop and commercialise new healthcare technologies, products and services by giving them appropriate access to the health service to validate and refine products; • Facilitating the health service to find efficiencies and improvements by engaging with innovative companies creating solutions to problems (reducing cost, increasing service efficiency, improving patient outcomes, etc.); and • Supporting innovative developments emerging from within the health service.
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Action No. 4.11 APJ ref 242 	Future agri-food research to be informed by consumer insights to improve translation of research output into commercial products on market.
Description	Explore with industry the potential for developing a Centre for Consumer Insight to inform future investment in research and development by Irish agri-food research bodies.
Status	Initiated
Implementation Date	2016 Q1/Q2
Lead Responsibility	DAFM/Bord Bia
Progress Update	The Centre for Consumer Insight concept was adopted by Sub and Main Board of Bord Bia comprised of industry representatives. It has now progressed to identifying suitable premises and a lease is under negotiation. The fit out is expected to be completed by end of June.

Action No. 4.12	At producer level, prioritise research and innovation investment in processes and technologies which improve productivity and sustainability of production.
Description	Progress research investment areas identified in SHARP.
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	DAFM
Progress Update	As in previous years the vast bulk of the topic areas specified under the Stimulus part of DAFM's most recent Call (October 2015) invited applications dealing with processes and technologies which would improve the productivity and sustainability of production. Moreover, this will continue to be the main

	focus of Calls for the foreseeable future since these two equally important priorities are strongly emphasised in the key strategic documents that guide the content of DAFM Calls, namely 'Food Wise 2025' and 'SHARP'.
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Action No. 4.14 APJ ref 250 for part a 251 for part b 	Improve capacity of agri-food companies to absorb research and innovation output from research bodies.
Description	<ul style="list-style-type: none"> a. Develop proposals for a Food Innovation Hub at its Moorepark campus. b. Lead research in collaboration with other research institutions and industry to derive applications from the significant investment in foods for health. c. Complete the €10m upgrade of Moorepark Technology Limited pilot plant. d. DAFM to continue to partner with the Irish Research Council's employment based Research Programme to facilitate the placement of post-graduate research students in agri-food enterprises. Develop further joint research / funding initiatives in Precision Agriculture. e. DAFM funded Agri-Food Graduate Development Programme to continue to upskill agri-food graduates for employment
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	<ul style="list-style-type: none"> a. Teagasc b. Teagasc c. Teagasc d. DAFM, IRC e. SFI, Teagasc, DAFM
Progress Update	<ul style="list-style-type: none"> a. A Proposal for a Food Innovation Hub has been developed and is currently under review with DPER. b. Teagasc are currently establishing a cluster of PhD students between Moorepark food and Alimentary Pharmabiotic Centre focused on applications from investment in food for health. The scale up of bioactive compounds from Food for Health Ireland for incorporation into foods with health benefits is continuing. c. Equipment selection and building design for upgrade of MTL pilot plant is ongoing. d. DAFM are partners on the IRC's employment based Research Programme. To date DAFM has provided approx. €630,000 to the IRC for the funding of 5 MSc and 8 PhD placements in agri-food, forestry, fisheries and bio-economy enterprises. Having reviewed the original agreement (which

	<p>expired recently) DAFM is now in close contact with the IRC with a view to extending the arrangement and intensifying and better publicising the opportunities that exist under it to all relevant enterprises.</p> <p>e. In late 2014 DAFM renewed and further improved the long running Agri-Food Graduate Development Programme (AFGDP) through an investment valued at €874,354 for the 4 years up to end of 2018. The programme – which aims to provide researchers working on DAFM-funded projects with a set of transferable skills needed for smoother entry into industry - focuses on enhancing industrial knowledge, business and personnel management, leadership, communications as well as advanced research and development skills. One of the new features of this AFGDP is to explore opportunities to liaise with on-going initiatives to provide cost-effective delivery of Continuing Professional Development.</p> <p>Three of the SFI Research Centres 2016 call abstracts are in the area of agri-food. SFI has worked collaboratively with Teagasc and DAFM to stimulate competitive applications in the precision/smart-agriculture field to national and European programmes. An example of this collaboration is the Smart Agriculture workshop hosted by SFI and Fraunhofer in Brussels on the 2nd and 3rd of February.</p> <p>As stated earlier, DAFM’s most recent Call contained a new industry co-funded Innovation Platform instrument directed at two topics areas one of which was Precision Agriculture. Applications are currently undergoing evaluation but if any are successful in this area DAFM is open to exploring a joint funding arrangement (or mechanisms for linkages to previously funded initiatives) with other relevant funders as illustrated in the following extract from the Call Specification document: “DAFM may also enter into co-funding arrangements with other Irish research funding bodies for certain projects where appropriate. Co-funding of projects, especially the larger ones, by RPO partners using either mainstream institutional funding sources and/or pan-industry levies made available to them is also possible and demonstrates a genuine integrated partnership approach.”</p>
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<p>Action No. 4.17 APJ ref 257</p> 	<p>Support progress towards the Harnessing Our Ocean Wealth targets through coordinated marine research and development strategies</p>
<p>Description</p>	<p>Publish and implement a National Marine Research & Innovation Strategy to</p>

	2020. Implement the recommendations of the Interdepartmental Marine Coordination Group, Development Task Force focused on research translation and development.
Status	
Implementation Date	2016-2020
Lead Responsibility	Marine Institute Funding departments and agencies
Progress Update	<p>The requirement for a National Marine Research and Innovation strategy was initially identified in <i>Harnessing Our Ocean Wealth</i> (HOOW). At the Harnessing Our Ocean Wealth Seafest conference on 1st July, it was announced that the public consultation for the National Marine Research and Innovation Strategy will take place in September 2016.</p> <p>This will focus funding within marine related research themes on 1) building human capacity; 2) supporting infrastructure and; 3) developing networks and relationships. In the context of this last area of focus the intention will be to ensure that Irish researchers are adequately connected to suitable academic, business and policy networks both nationally and internationally. This will be achieved through direct networking supports and also utilising Co-Funds through H2020 supported ERA-NETS and JPI Oceans instruments.</p>

Action No. 4.18	Implement the actions identified in EPA Research Strategy 2014–2020
Description	Support and inform transformation of Ireland’s economy and society to a sustainable base with reduced environmental damage and adverse impacts on human health, by generating evidence and building models to inform policy development and implementation, and developing solutions through novel technologies and methods that address global and regional challenges.
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	EPA
Progress Update	In 2015 under the EPA Annual Call 43 projects were funded which represented a budget commitment from the EPA of over €8 million. The programme is managed under three pillars (climate, water & sustainability). EPA-funded environmental research provides essential scientific support for environmental policy development in the areas of Climate Action, Transition to a Low Carbon Economy, Water management, National Peatland Strategy, Stockholm Convention on POPs and the National Radon Control Strategy. Two projects co-funded with HSE will support the Healthy Ireland initiative. Analysis of the turnaround time indicated that this was a very efficient process in that 95% of the grant awards were made within 20 weeks of the closing date of the research call.

	<p>The variety and scale of the research reports (25) published in 2015 has highlighted the critical role that EPA-funded research has played in:</p> <ul style="list-style-type: none"> • Providing substantive evidence to support actions on policy development and investments which will be resilient to the impact of climate change • Developing novel technologies and methods to address key environmental challenges in the areas of Drinking Water & Waste water management. Research has provided valuable information of emerging water pollutants and in support of Water policy and implementation • Providing a greater understanding of air quality issues & pollution sources and also innovations for more sustainable household consumption patterns • Information is also provided on the linkages with other National funders and • EPA Response to Innovation 2020 initiatives and also on the role the EPA plays in participating in and promoting Horizon 2020 and the Climate and Water Joint Programming Initiatives. <p>The Annual Info H2020 Conference was held on 21st October 2015. Presentations from EPA DG and various invited speakers from Europe. There were 117 attendees at the event. A survey of the attendees was undertaken and of the 39 respondents the event was rated as very good (78%) or good (22%). In addition there were six roadshows held in 2015 in the various colleges.</p> <p>The EPA research programme has an active communications programme via our research website and research archive , Mainstream Media, Social Media (twitter, LinkedIn,) and a number of research newsletters for National and EU promoted activities,</p> <p>In addition, the Research team developed an interactive web application for exploring information about projects which have been funded in Ireland on Water Research. The DROPLET database contains details of approx. 450 research projects and there have been over 100,000 website hits to the database since its launch in June 2015.</p>
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Action No. 4.19	Create high-impact ventures out of opportunities in the research base and accelerate business model innovations
Description	Continue to support the National Digital Research Centre
Status	Initiated
Implementation Date	Ongoing
Lead Responsibility	DCENR
Progress Update	DCENR continues to support the NDRC through the advancement of funds under a concession agreement in place between the parties.

Action No. 4.20	Implement research-related actions in the Energy White Paper and forthcoming Energy Research Strategy
Description	Build on the integration of energy research, development and commercialisation support activities to further develop a coherent energy innovation process and to ensure maximum impact from our investment in energy research.
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	DCENR
Progress Update	As part of the AO Development Programme, a project on developing an Implementation and Review Programme for the Energy White Paper has commenced. D/Energy are sponsoring the project. The Energy White Paper was published Q4 2015 and the Research Strategy has been finalised and is awaiting launch.

Action No. 4.26	Establish a Security and Defence Enterprise Group
Description	This group will bring together enterprise and academic researchers and practitioners in the areas of security and defence with the purpose of identifying areas of common endeavour and collaboration.
Status	Initiated
Implementation Date	2016
Lead Responsibility	D/Defence
Progress Update	<p>D/Defence and the Defence Forces are currently developing a project plan to progress this action with Enterprise Ireland. Included in this plan will be 3 projects related to the collaborations between the Defence Forces and Irish-based enterprise and research institutes. In addition, there will also be 2 further projects:</p> <p>(1) Develop a policy on intellectual property rights and endorsement for the Defence Organisation.</p> <p>(2) Identify opportunities for co-operative collaborative engagement between the Defence Forces and Irish-based enterprise and research institutes, including third level colleges.</p> <p>All three projects are expected to progress in 2016 and 2017 with the project on developing the policy on intellectual property to be given priority, therefore the implementation date on the attached should read 2017.</p>

The role of intellectual property in innovation

Action No. 5.1 APJ ref 86  	Publish a revised IP Protocol to ensure that the Irish protocol remains 'best in class'
Description	A revised IP Protocol will be published incorporating feedback from industry and other stakeholders on issues identified in operating to the current protocol
Status	Complete
Implementation Date	2016
Lead Responsibility	DJEI, KTI
Progress Update	A revised IP Protocol was agreed by Government on 5 th January 2016 and was published on 14 th January 2016.

Action No. 5.2 APJ ref 87  	Provide additional resources and tools to improve industry-academic collaboration
Description	Expand resources and tools for enterprise to engage with the public research system and to access IP, including model agreements, practical guidelines and improved information on expertise within the public research system.
Status	Initiated
Implementation Date	2016
Lead Responsibility	KTI
Progress Update	KTI has recently launched its latest resource: the KTI Model Collaborative Research Agreements and associated KTI Practical Guide to Collaborative Research Agreements. These are aimed at making the process of contracting between companies and publicly funded research organisation more efficient.

Action No. 5.3 APJ ref 95 & 91	Encourage commercialisation of publicly-funded research
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Description	<p>All funders of public research will increase the commercialisation of the research that they support, using the available commercialisation & technology transfer programmes, to ensure the efficient transfer of economically valuable research outputs to enterprise and to meet the following targets:</p> <ul style="list-style-type: none"> a. Commercially relevant technologies (Licences, Options, Assignments): 175 (per annum by 2020) [over 155 in APJ Action 95] b. Spinouts: (40 per annum by 2020) [over 30 in APJ Action 95] c. High Potential Start Ups (HPSUs) from Spinouts: (16 per annum by 2020) [over 10 in APJ action 95] d. Collaborative research projects between enterprise and the public research system: (920 per annum by 2020) [830 in APJ Action 91]
Status	Initiated
Implementation Date	2016-2020 Q4 2016
Lead Responsibility	EI, All research funders
Progress Update	Progress is underway on delivering all of the above targets

Action No. 5.6 Link to APJ ref 34  	Raise IP awareness
Description	Strengthen IP awareness of the opportunities for firms to engage in IP activity.
Status	Initiated
Implementation Date	DJEI, Patents Office, EI and LEOs
Lead Responsibility	2016-2020
Progress Update	This action is linked with 5.7 as both will be advanced together. DJEI convened the first meeting of the interagency group in June 2016. The group is developing a roadmap of actions aimed at both increasing IP awareness and enhancing the IP capacity among the Irish firm base.

Action No. 5.7 APJ ref 34  	Build IP capability and resilience at enterprise level
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Description	Focusing on Ireland-based R&D-active and export-oriented client base, establish an inter-agency group (led by EI) to develop a roadmap for building IP capability and resilience at enterprise level.
Status	Initiated
Implementation Date	2016-2020/ Q2 2016 per APJ
Lead Responsibility	EI, DJEI with relevant agencies
Progress Update	As per Action 5.6 above, DJEI convened the first meeting of the interagency group in June 2016. The group is developing a roadmap of actions aimed at both increasing IP awareness and enhancing the IP capacity among the Irish firm base.

Action No. 5.13 APJ ref 31 & 32 	Support the Knowledge Development Box
Description	Develop outline scheme and attendant legislation to support the Knowledge Development Box for qualifying IP assets.
Status	Initiated
Implementation Date	2016
Lead Responsibility	DJEI, Patents office
Progress Update	DJEI has developed an outline scheme with (i) draft heads of a Bill prepared and (ii) amendments to patents legislation drafted to be submitted to Government in Q2 2016

Innovating with the EU and the wider world

<p>Action No. 6.1 APJ ref 96</p> 	<p>Secure €1.25bn in funding from Horizon 2020</p>
<p>Description</p>	<p>Optimise sectoral engagement (the higher education sector, industry and publicly funded research bodies) in Horizon 2020 to achieve the national target.</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2020</p>
<p>Lead Responsibility</p>	<p>High Level Group, Horizon 2020 National Support Network, research performers (DJEI to coordinate)</p>
<p>Progress Update</p>	<p>Ireland's drawdown for the first 29 months (from January 2014 to May 2016) of Horizon 2020 is €275 million; this is in line with reaching our national target of €1.25 billion.</p>

<p>Action No. 6.2 APJ ref 96</p> 	<p>Catalyse the creation of and participation in consortia to bid for large-scale Horizon 2020 projects</p>
<p>Description</p>	<p>a. Ongoing analysis of large scale opportunities, facilitating of linkages between potential Irish leads and partners for consortia b. Provide support and co-funding for large bids to H2020 led by Ireland</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2020</p>
<p>Lead Responsibility</p>	<p>a. Strategic Research Proposals Group, reporting to High Level Group b. Horizon 2020 National Support Network, Research funders</p>
<p>Progress Update</p>	<p>a. An updated list of large scale opportunities for Irish participation in Horizon 2020 projects has been produced and is under consideration by the Strategic Research Proposals Group. b. The Horizon 2020 National Support Team continues to provide support and funding for participation in large scale Horizon 2020 bids.</p>

<p>Action No. 6.6</p>  <p>European Research Area</p>	<p>Ensure effective national coordination and oversight of participation by Ireland in Joint Programming Initiatives</p>
<p>Description</p>	<p>National Steering Group for Joint Programming Initiatives will meet up to twice a year, with bilateral meetings as appropriate to ensure effective oversight.</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016-2020</p>
<p>Lead Responsibility</p>	<p>DJEI</p>
<p>Progress Update</p>	<p>In order to develop a context and mandate for the National Steering Group, DJEI is engaging bilaterally with Irish partners in each of the seven Joint Programming Initiatives in which Ireland is currently active. The National Steering Group will convene in the second half of 2016.</p>

<p>Action No. 6.12</p>  <p>European Research Area</p>	<p>Initiate negotiations with CERN for Ireland's membership options</p>
<p>Description</p>	<p>Enter discussions with CERN</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016</p>
<p>Lead Responsibility</p>	<p>DJEI</p>
<p>Progress Update</p>	<p>The Minister for Skills, Research and Innovation wrote to CERN in January 2016 to formally notify them of Ireland's intention to enter into negotiations on our membership options. A response from CERN's Director General has been received.</p>

<p>Action No. 6.14</p>	<p>Initiate membership application for full membership of ELIXIR</p>
<p>Description</p>	<p>Observer status secured in 2015. Undertake process to progress to full membership.</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016</p>
<p>Lead Responsibility</p>	<p>DJEI</p>
<p>Progress Update</p>	<p>A Memo for Government has been drafted by DJEI in conjunction with DFAT and the Office of the Attorney General seeking approval to join ELIXIR. This will be brought to Cabinet at the earliest opportunity by the Minister for Foreign Affairs and Trade.</p>

Innovation implementation

Action No. 7.1  European Research Area	Establish the Innovation 2020 Implementation Group
Description	To ensure a coherent approach to implementation of this strategy the IDC, the RPAG and the H2020 HLG will be merged to create one coherent group to drive implementation of this strategy – the Innovation 2020 Implementation Group.
Status	Complete
Implementation Date	2016
Lead Responsibility	DJEI
Progress Update	The Innovation 2020 Implementation Group has been established and a 2016 Work Programme has been agreed.

Action No. 7.2  European Research Area	Maximise synergies between the Innovation 2020 Implementation Group and other relevant groups in the science and innovation area
Description	Put in place informal reporting mechanisms between the Innovation 2020 Implementation Group and other relevant groups to ensure coherence in development and delivery of policy across all relevant Government departments.
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	All relevant Government departments
Progress Update	A number of meetings with stakeholders, including industry and academia, to discuss the ongoing work of the Innovation 2020 Implementation Group have been undertaken and further such meetings are planned.

Action No. 7.3	Implement, monitor and build on the Irish National Policy on Ensuring Integrity in Research
Description	a. Develop and implement nationally harmonised best practice guidelines, training curricula, grant conditions, and processes for handling research misconduct. b. Agree a process and format for the publication of the outcome of research

	<p>integrity investigations having regard to existing regulations relating to misconduct and discipline.</p> <p>c. Consider expanding and extending SFI pilot audits to all funders i.e. national shared audit scheme</p>
Status	Initiated
Implementation Date	2016-2020
Lead Responsibility	Research Integrity Forum , research funders and performers
Progress Update	<p>The Research Integrity Forum has finalised an agreed position paper on the role and responsibilities of the Research Integrity Officer.</p> <p>The Forum is working through a document outlining guidelines for the investigation of misconduct in research with the aim of finalising the guideline by July 2016.</p> <p>The Forum will shortly agree on a position paper on the overlap between research ethics and integrity. The paper adopts the international viewpoint that research ethics is a subset of research integrity and makes a clear statement that institutional ethics committees should not be tasked with investigating allegations of research misconduct.</p> <p>The Forum is exploring collaborative options for putting in place research integrity training for staff, students, research integrity officers and investigative panel members. The cost of training delivery is a key issue.</p> <p>The Forum has agreed to work with other stakeholders on the important issue of storage of research data.</p> <p>b. The Forum has agreed on a process and format for the publication of the outcome of research integrity investigations.</p> <p>c. The Forum sub-group of research funders is putting in place a set of standard research integrity clauses to be included in funder's contracts and/or call documentation.</p> <p>Additional progress:</p> <ul style="list-style-type: none"> • National Event: plans for a national event to raise awareness of responsible conduct of research are underway. This will be hosted by the Royal Irish Academy in January 2017. A sub-group of the Forum has been formed to steer the event, chaired by Dr. Maura Hiney from the Health Research Board. • UK Research Integrity Office: DCU, UCD, UCC, TCD and SFI have joined the UK Research Integrity Office, a non-profit which provides valuable training and advice on research integrity to organisations. Representatives from DCU, UCC and UCD will attend the UK RIO annual conference in May 2016.

<p>Action No. 7.4</p>  <p>European Research Area</p>	<p>Report to Cabinet Committee on progress implementing the strategy</p>
<p>Description</p>	<p>The Innovation 2020 Implementation Group will report annually to the Cabinet Committee on implementation of the strategy, including on progress on levels of investment necessary to reach the 2.5% target</p>
<p>Status</p>	<p>Initiated</p>
<p>Implementation Date</p>	<p>2016-2020</p>
<p>Lead Responsibility</p>	<p>Innovation 2020 Implementation Group (DJEI to coordinate)</p>
<p>Progress Update</p>	<p>This Progress Report was brought to the Cabinet Committee for the Economy, Trade and Jobs on 14th July 2016 and to Cabinet on 19th July 2016.</p>

Annex 1 - Breakdown of progress on actions

Status	Number of Projects
Complete	3
Initiated	50

Annex 2 - Glossary

DAFM - Department of Agriculture, Food & Marine

DCENR - Department of Communications, Energy and Natural Resources

DES - Department of Education & Skills

DoF - Department of Finance

DJEI - Department of Jobs, Enterprise and Innovation

EI - Enterprise Ireland

EPA - Environmental Protection Agency

ERA - European Research Area

ERC - European Research Council

HEA - Higher Education Authority

HEI - Higher Education Institute

HRB - Health Research Board

IDA - Industrial Development Agency

IRC - Irish Research Council

IUA - Irish Universities Association

KTI - Knowledge Transfer Ireland

MI - Marine Institute

PRTL - Programme for Research in Third Level Institutions

RPO - Research Performing Organisation

SEAI - Sustainable Energy Authority of Ireland

SFI - Science Foundation Ireland