

Consultation on Innovation 2020 Mid-Term Review

Department of Business, Enterprise & Innovation

October 2018

INNOVATION 2020 MID-TERM REVIEW

The American Chamber of Commerce Ireland welcomes the opportunity to input to the Mid-term Review of Innovation 2020 (I2020).

American Chamber member companies and their teams have made a pivotal contribution to Ireland's evolution into a modern and diverse society; and an economy that trades with confidence and ambition on the world stage. Innovation and ambition have always been at the centre of how our members conduct business both in and from Ireland. The American Chamber's priority is that Ireland remains a unique transatlantic trade and investment gateway and a location of choice for US inward investment to Europe.

The competition for foreign direct investment (FDI) is intense, and jurisdictions are continuously improving their inward investment offering. In response, Ireland must sustain its focus on being a competitive open economy, innovating for prosperity. A recent survey of the leadership of American Chamber member companies identified the strategic priority areas to keep business competitive for inward investment as;

- developing, rewarding and attracting talent;
- encouraging industry-led research and innovation;
- enhancing the competitiveness of investment incentives;
- access to residential accommodation, physical and digital infrastructure;
- controlling the cost base.

Global innovation leadership will require a step change in investment levels in education and research, improved use of technology and innovation in providing state services and a significant uplift in the environment for entrepreneurs. The American Chamber believes that the strategic goal for Ireland should be to attract further public-private investment through proven partnerships between Irish-based enterprise and the research, development and innovation (RDI) system with a target of doubling national spending on RDI between 2015-2025.

OVERALL OBSERVATIONS: MID-TERM I2020

Investing in Talent: The latest OECD analysis¹ confirms what is known since the launch of I2020 - that education spending has lagged our peer jurisdictions and been challenged by positive demographics as student numbers rise. The American Chamber supports the Government's ambition to make the Irish education and training system the best in Europe by 2026. This will require performance improvements in the areas of science, technology, engineering and mathematics (STEM) and life-long learning (LLL) to adequately support the knowledge intensity of economic activity. Raising investment levels in education and training to match peer jurisdictions must be a priority. Specifically, the American Chamber believes that a strategic decision on the recommended funding options outlined in the report of Expert Group on Future Funding for Higher Education (July 2016) is required before the end of the I2020 period.

Balancing Excellence and Impact: The American Chamber believes that Science Foundation Ireland's (SFI) focus on "Excellence and Impact" has been a sound strategy for inward investment. Thematically, I2020 reflects a welcomed recognition that a rebalancing of emphasis was needed, seeking to extend investment into higher technology readiness level (TRLs) programmes - a strategic push for 'impact' through application of knowledge or/and greater commercialisation. The benefits flowing from this relationship include strengthened enterprise, export and job creation performance. Sustaining excellence while extending initiatives of greater economic and/or societal impact was always predicated on a significant step-up in public investment over the period of the strategy. While there has been a welcome lift in funding in recent Budgets, at the mid-point of the strategy it must be a priority to retain Ireland's international benchmarks for excellence that laid the foundations for I2020's ambitions in the first place.

Priority RDI Focus: The American Chamber is very supportive of the 'Disruptive Technologies Innovation Fund' (DTIF) to address national policy challenge contained within Government's Project Ireland 2040. Recognising the existing strengths in Ireland's 'bottom-up' response to funding opportunities (led by the HEI-based centres), opportunities for 'top-down' thematic calls for enterprise-led consortia should feature to reflect Ireland's maturing innovation landscape. As the largest economic entity in the jurisdiction, Government's role in procuring innovative solutions from enterprise to address national policy challenges has immense potential. By the end of 2020, industry-led innovation programs should be rooted in the eco-system, where a portfolio of enterprises are

¹ OECD Education at a Glance 2018

fully involved in challenge-based programmes which receive direct funding. For 2019, the American Chamber recommends that Government formulate criteria for specific thematic challenge-based funding calls that promote industry leadership, encourage MNC-SME-HEI linkages, aligned with targeted Government priorities for the delivery of public services and builds on established eco-system strengths to deliver projects of measurable impact within 3-5 years.

Changing Policy Environment: The policy external environment has changed from the commencement of I2020 in 2016 in three respects. Firstly, upheavals in the competitive landscape (including international tax reform) are driving investment decisions towards strong alignment of economic substance and taxing rights. Multinationals continue to seek to do more, in less locations. Secondly, depending on the nature of the UK's exit from the EU, there are potential impacts on the Irish RDI-eco system given its linkages with UK research institutions, especially in the context of the EU's Horizon 2020 and its successor programme. Finally, the pace of disruptive change in society, the economy and in enterprise development being driven by digitalisation is accelerating. All three forces increase the strategic importance for Ireland in building its knowledge base. As a small open economy – Ireland will increasingly compete on talent and its fields of global leadership in business, science and technology.

Roadmap and Milestones: Given that many of the action items identified in the implementation of I2020 were distributed over the entire 2016-2020 period without the benefit of a roadmap of milestones, it is difficult to evaluate progress to date in a quantifiable manner. While all plans benefit from a degree of flexibility to respond to a changing environment, the lack of a roadmap now means that at its midpoint, two-thirds of the 140 actions remain 'ongoing'. Any opportunity to set down 2018 baseline progress and milestones for 2019 and 2020 would strengthen implementation over the closing two years of the strategy.

The American Chamber wish to make the following observations on progress to date under a selection of the strategic pillars of I2020:

GOAL 1 IRELAND AS A GLOBAL INNOVATION LEADER

Action 1.1 Move Ireland Upwards in EU and Global Rankings

Recognising that Ireland has sustained its top ten placement within the European Innovation Scoreboard, the country can make progress on becoming a **Top Five** ‘innovation champion’ by improving performance scores in life-long learning, public sector services investment in innovation, venture capital funding and strengthening innovation linkages between SME and FDI sectors, as well as public sector-enterprise innovation collaborations to deliver services. From an inward investment perspective, Ireland’s main competitors for innovative-led investment rest outside of the EU. Hence, as an effective benchmark we must look to suitable global comparators.

Notwithstanding tremendous success in moving from the top-50 at the start of the century to top ten in 2017, it is concerning that in 2018 Ireland has slipped just outside the top 10 global scientific rankings². Ireland’s position just within the top ten of the Global Innovation Index 2018³ is driven by strong macroeconomic performance, not from fundamental innovation investment and inputs. **Seeking a placement in the Top Five Globally should be Ireland’s objective.** Raising investment levels in education and research, improved use of technology and innovation in providing state services (including healthcare) and a significant uplift in the environment for start-up/spin out activity will propel Ireland in that direction.

Action 1.2 Reach R&D Intensity target of 2.5% of GNP:

The American Chamber has consistently argued that investment in RDI in Ireland should be above 3% of GDP⁴ to move towards investment levels seen in its international peers (countries of similar size and openness). While we should set an ambitious target for 2020, at mid-point it’s clear that targets as stated look unreachable to the end of the period and risk undermining the credibility of our real ambitions. The American Chamber recommends a renewed roadmap of revised set of ambitious annual expenditure targets out to 2025 aiming to raise to levels of

² From the Thomson Reuters’ InCites Essential Science Indicators 2018

³ Global Innovation Index 2018 (GII) : Cornell University, INSEAD, and the UN World Intellectual Property Org.

⁴ GDP spending on R&D as measured by the OECD = total expenditure (current and capital) on R&D carried out by all resident companies, research institutes, university and government laboratories, etc., in a country. It includes R&D funded from abroad.

other European ‘Innovation Champions’⁵, as well as extend our investment benchmarks to include global comparators like Singapore and New Zealand from the Global Innovation Index.

Promoting tax-based initiatives to conduct research in Ireland and embed its commercialisation in Ireland: The American Chamber remains of the view that the existing R&D Credit Regime requires urgent targeted reform to address what our members view as a “mismatch” that has emerged between the principles underpinning the regime, its promotion and its implementation guidelines. Uncertainty within the enterprise community regarding eligible expenditure is preventing the effective use of this incentive to retain and win new innovative-led investment and employment. These kind of projects and jobs often provide the beach-head for new business units and support wider manufacturing, innovation and strategic support functions within an Irish-based operation. The American Chamber has argued that the regime needs to be clear and consistent if it is to be effective. As such, it needs to reflect the overarching policy, as outlined by Government and the Department of Finance, to be strategically focussed on reducing the business cost of undertaking R&D in Ireland as an incentive to invest.

Double private funding of publicly performed R&D to €48m per annum: There is an opportunity to establish a ‘stretch’ objective to push this figure towards €60m per annum by 2020. The ambition to move the dial here would be an important external private sector validation for the quality and potential impact of research activities based in Ireland. This can be more easily achieved in tandem with raised levels of government investment in research and development (GERD).

Secure €1.25bn from Horizon 2020: Achievements in reaching and exceeding this goal are greatly welcome and sets an appropriately high bar for the next Framework Programme. This is important if Ireland-based research centres are to step-up to more leadership of consortia, with the prospect of changes to the UK’s engagement with future Frameworks post its planned exit from the EU. In that regard, the American Chamber believes that setting targets for Irish-based leadership in bids should now be an important performance metric. In evaluating performance ahead of the next EU Framework, the American Chamber recommends that a mapping exercise is conducted to plot areas of H2020 investment and how it is being leveraged in other areas of government and

⁵ Sweden, Finland, Austria, Israel and Denmark have investment levels consistently above 3% of GDP vs Ireland hovering above 1%. Considering Ireland’s specific GDP characteristics, Ireland’s investment levels by 2025 as measured by a proportion of GNI* suggests at least a doubling of 2018 funding levels in real terms is required.

enterprise innovation investment; identifying gaps and opportunities in terms of higher performance of the entire eco-system. Ireland should remain alert to risks to its research reputation from the slippage of Irish institutions in global university rankings – largely a function of relative low spending/investment levels.

GOAL 2: INNOVATION IN ENTERPRISE

Action 2.1 & 2.3 Research Prioritization (RP):

The American Chamber welcomes the prioritization update completed in 2018, with the addition of emerging areas of new and disruptive technologies especially in the digital and healthcare arena. **It continues to be a concern that Ireland has such a numerous portfolio of ‘strategic priorities’** of equal weighting for funding and the American Chamber will continue to advocate for some ‘tiering’ to signal areas to be scaled significantly. Where the benchmark for funding is world-class excellence, it would be understandable that strategy would prioritise funding.

Action 2.2 Within the Current Cycle of RP, stimulate public research on Services and Business Processes and Manufacturing Competitiveness:

The importance of attracting ‘star researchers’ is critical to spurring additional enterprise investment in research and development. While their value is significant in terms of the performance evaluation, output metrics and reputation of the Irish research ecosystem – their presence raises the standard of talent attracted to research centres, and the flow of talent and innovation flowing from centres into the wider economy. Indeed, their ability to connect with innovation leadership in enterprise globally (connecting the ‘big-brains’) ensures that Ireland is a hub for innovation leadership conversations with potential positive externalities. Competition for this level of talent is a global challenge and there must be mechanisms to allow for recruitment of strategically important talent at levels of remuneration outside of the normal limits of public sector pay. Flexibility and innovation will continue to be required in this sphere.

The American Chamber is strongly supportive of investment that reinforces Ireland’s leadership in world class advanced manufacturing as advancements in robotics, technology and the digital marketplace makes manufacturing more flexible and offers transformational benefits to many industrial processes. Having a renowned and internationally recognised centre of excellence in advanced manufacturing would underpin Ireland’s ambition to continue to design, supply and support the delivery of goods and services to global markets.

Further, the American Chamber is very supportive of the ‘Disruptive Technologies Innovation Fund’ (DTIF) contained within the Project Ireland 2040 plan to address the national policy challenges – thus aligning this innovation investment with public priorities.

Action 2.4 & 2.5 Optimising Enterprise RDI Supports & Accessibility

The expected review of financial supports should consider benchmarking against key competitor jurisdictions to ensure that Ireland’s suite of incentives is fit for purpose and best in class at stimulating research and development-led investment. The American Chamber look forward to its imminent publication. The American Chamber has been consistently of the view that in building stronger linkages between the research base and the multinational enterprise base, the flow of technology and know-how will be mediated through start-ups rather than flowing directly from research centres themselves. Opportunities to encourage more linkages with SME’s and/or research and technology centres should be explored. To the end of the I2020 period, an enhanced program of competitive excellence-based RDI funding open to the entire enterprise base will be an effective way of stimulating the collaborative research ecosystem and knowledge transfer within Ireland. In this context, while noting improvements in access to finance (including venture capital), there is an understanding that funding start-ups and scale-ups in Ireland remains challenging amongst its peer comparators.

A central source to access, understand and interrogate the array of financial supports available to enterprise from both domestic and international institutions would be warmly welcomed by the American Chamber. In addition, **advisory support to allow for a ‘one-stop-shop’ approach to accessing appropriate programmes would be helpful to ensure that the operation of Ireland’s incentive regime is understood, accessible and seen as competitive.**

Action 2.6 Optimise Network of Technology & Research Centres

As stated earlier, the American Chamber remains strongly of the view that Ireland’s needs to have an internationally recognised centre of excellence for advanced manufacturing to drive our ambitions in remaining relevant to the transformation that is taking place because of digitalisation and automation in ‘Industry 4.0’.

The American Chamber has expressed its views that the organisation of research centres distributed between academic institutions is proving complex with challenges in accessing knowledge, inconsistent positioning and conflicting loyalties between the hosting institution and the research centre itself. In keeping with the nature of a

one-stop-shop it is important for research centres to have a coherent ‘front window’ in one single location to market their capabilities impactfully externally to visiting potential partners/investors. Feedback from members suggest this is an area for improvement recognising that regionally-based centres remain important sources of talent to local clusters.

To echo the earlier observations around setting strategic research priorities, **the American Chamber believes that the establishment of centres and their continuance should not be extended if they cannot be adequately funded.** Stretching resources risks retarding some centres achieving the scale needed to be globally significant. This view recognises that there is important value in having access to a broad base of knowledge, but also that world excellence requires strategic prioritization of resources. The American Chamber would welcome a stakeholder dialogue before the end of the I2020 period to focus on the ‘organisational design’ of the overall system – to include the relationship between types of centres and their sponsor agencies, their respective mandates in fundamental, applied and interdisciplinary research and how this is aligned to the enterprise innovation pathway (where enterprise is investing, creating employment).

The American Chamber recommends the bringing forward and publication of standard performance indicators (KPI’s) for Technology Gateway, Technology Centres and Research Centres appreciating differences between the three pillars. In terms of impact, there should be allowances for the fact that the Irish research system is relatively young – its main benefits flowing from being a foundry for talent. Metrics should profile the flow of talent to industry, and the financial and strategically important (to enterprise) linkages with industry.

Action 2.7 Promote Ireland as a Test-Bed for innovative technologies and therapies:

The American Chamber would encourage progress of these initiatives while seeking opportunities to align with public sector-enterprise engagement to leverage funding under the Disruptive Technologies Innovation Fund (DTIF). Consideration should be given to the adoption within the State Sector of disruptive innovation to deliver enhanced public services utilising approved EU procurement mechanisms. Ireland has in the past used ‘leap frog’ adoption of technologies to enhance its productivity - a notable example being telecommunications in the 1980’s and 1990’s with the roll out of automatic and digital services across the country. Applying this procurement approach to a set of ‘Grand Challenge’ within the DTIF would attract significant interest as it would couple research and innovation capability with Ireland’s sophisticated enterprise base. For 2019, the American Chamber recommends that Government formulate criteria for initial funding calls that promote industry leadership,

encourage MNC-SME-HEI linkages, align with Government priorities in delivery of public services and builds on established eco-system strengths to deliver projects of measurable impact within 3-5 years.

Action 2.8 Promote inter-disciplinary research:

A humanities perspective of culture, anthropology, linguistics and meaning, education, health and well-being is required to successfully design, develop and deploy complex artificial intelligent (AI) and robotic-driven processes at the heart of a digital transformation taking place in the global economy and society. Thus, excellence in the liberal arts compliments technological and scientific leadership and, by enabling wider adoption of innovation, helps to limit the existence of digital-divisions in society. **Setting some new objectives to link the investments being made in technology and research centres with broader social-science and liberal arts research would fortify the Irish research eco-system.**

Action 2.11 & 2.12 Increase collaboration within the public research system.

The American Chamber would encourage the explicit recognition and reward best-practice in collaboration efforts between researchers, institutions and funders. Within this, the recognition of applied research should be elevated to encourage a balance in the research system. The American Chamber continues to favour sustaining excellence in research, but a healthy recognition for achievement in application would strengthen the entire eco-system.

The establishment of new enterprise liaison positions within KTI is an opportunity to manage and establish a one-stop-shop approach to help enterprise navigate and locate both knowledge/research in the public research system and incentives appropriate to enterprises.

Action 2.14 Promote Standards and Regulations as a Source of Competitive Advantage:

The American Chamber continues to encourage the NSAI to work with our members to integrate an understanding and development of standards and regulations for emerging technologies. This should include the capacity to access the international standards' networks via the operations of multinational firms based in Ireland. In the expected review of the R&D tax credit in 2019, **the American Chamber would encourage exploring the inclusion of research and development costs associated with contributions to standards development as a pathway to encourage 'standards by design' amongst enterprise.**

GOAL 3 EDUCATION FOR INNOVATION

Action 3.1 Strengthen STEM teaching and learning at primary and post-primary levels:

Today, in the region of 250,000 people are directly and indirectly employed in Ireland because of US business activity. To maintain this foreign direct investment (FDI) Ireland must compete based on its available talent pool, innovation and operational track record. Industry and the FDI sector make significant contributors to higher and further education institutions through research and innovation programmes, curriculum development support and work placement opportunities. Benefits flowing from this engagement include strengthened learning outcomes, greater skills alignment and greater strategic linkages between industry and the sector.

The American Chamber supports the Government’s ambition to make the Irish education and training system the best in Europe by 2026. Ireland must improve its performance in the areas of science, technology, engineering and mathematics (STEM) and life-long learning (LLL) to adequately resource the knowledge intensity of economic activity. The country’s talent strategy will be an important pillar to future-proof Ireland and sustain the economy through these changing environments.

The latest OECD analysis confirms what is known since the launch of I2020 - that education spending has lagged our peer jurisdictions and been challenged by positive demographics as student numbers rise. Those population trends suggest that an additional 40,000 entering the student population by 2030⁶. Per student spending across all education sectors is at OECD averages, and lags badly for early childcare – a critical foundation period linked with higher achievement and education progression rates. The American Chamber welcomes increased education spending in Budgets 2017-19, but we share other stakeholder concerns that this is only starting the process of addressing falls in spending per student at primary and secondary levels of 22%, and at third-level of 29pc in the 2010-2015 period⁷.

The American Chamber recognises the output from the Expert Group, Chaired by Peter Cassells with its central conclusion that Ireland needs to substantially increase the level of investment in higher education and training if the sector is to fulfil its mandate in supporting Ireland’s national economic and social development. The report argues that this proposed investment would have to be linked to enhanced quality and verification of outcomes.

⁶ Ireland’s Future Talent: Irish Universities Association 2018

⁷ OECD Ireland at A Glance 2018 OECD

The American Chamber believes that a strategic decision on the recommended funding options outlined in the report of Expert Group on Future Funding for Higher Education (July 2016) is required before the end of the I2020 period. Government should act on the report's recommendations. Whichever funding regime is adopted it should;

- provide a sustainable mechanism for funding 3rd level,
- promote inclusiveness between social backgrounds,
- not express preference for full-time, part-time and postgraduate pathways to attainment,
- allow for operational flexibility to respond to changing demographics.

In addition, the American Chamber continues to recommend a renewed commitment to the STEM Implementation Programme (STEM Action Plan) to include **speedy delivery of Computer Science into the Leaving Cert curriculum, resourcing the CPD framework for teachers and investment in promoting STEM careers** at all levels within the education system with a focus on young female participation.

On STEM female participation and progression, it remains a concern for the American Chamber that STEM participation by females entering third level is running at 1 out of 4. The membership of the American Chamber is especially keen to contribute and collaborate with educators positively in their outreach to schools, colleges, students and parents. **The American Chamber welcomes heightened ambitions within the STEM Action Plan to build collective understanding and capabilities to address this area positively and call for a robust and resourced plan of action within the I2020 period.**

Action 3.2 & 3.3. Further Scale STEM promotion activities:

The American Chamber is concerned at the progress under this heading and support the following actions to the end of 2020:

- Promotion of an Industry-Education collaboration in a new model for school's career guidance – supporting a targeted approach to the female engagement and participation with STEM. In this regard the American Chamber is participating in DEBI-led initiatives in career guidance and mentoring under the STEM Action Plan with the Department of Education and Skills.
- Continue to support the ICT Action Plan including heightened efforts in promoting Ireland as destination for digital career opportunities and development.
- Bring forward a National Languages Strategy that supports an all-of-system/levels approach including immersion in-country language development programmes beyond the existing achievement of EU

programmes like Erasmus. In this regard, the role of native language teachers in the schools should be considered as a bridge to immersion.

- Deliver on Government's plan to have 14,000 Apprentices and Traineeships per annum by 2020 by effective promotion of the opportunities to employer and candidate markets, encourage flexibility in work-training timetables, the use of on-line tools and the exploration of headcount cost sharing mechanisms to boost provision.

Action 3.5, 3.6, 3.7, 3.12 Increase the Enrolment of Postgraduate Researchers

Following the fiscal restraint of the national budget the final two years of Innovation 2020 present an opportunity to make significant progress on the quantum of PhD and research master's output in engineering and science disciplines including process engineering, analytics, AI and biotechnology.

Improvements in the mapping career opportunities are welcome. Confidence in future funding is important in the recruitment and retention of talent, as does competitive post-graduate income. The American Chamber looks forward to the publication of metrics to score applicants for academic positions with industry linkages.

Recognising the progress made on the number of SFI PhD research centre students finding employment within industry from 24% in 2015, to 29% in 2017, **sustained efforts should be made to increase the numbers flowing to industry to reach the target of 35%.**

3.15 Address Gender Issues Relating to Career Progression in RDI

The American Chamber supports efforts to promote the retention and progression of females in the research system and looks forward to the publication of the Gender Equality Task Force Action plan. Our members are encouraged by efforts such as the promotion of the Athena SWAN awards seeking to recognise practices that;

- Work towards increasing the proportion of women employed in higher education institutions;
- Improve the representation of women on committees;
- Enhance the transition from postdoctoral researcher to first academic post;
- Raise working practices to support career progression;
- Encourage women's networking across higher education institutions.

In addition, the scope of this action domain area should be ambitiously widened to address diversity in orientation, ethnicity (including international education participation) and ability.

Action 3.16 Ensure a Strategic Approach to the Development of Existing and New Research Infrastructure

As capital budgets improve, **the American Chamber is supportive of targeted investment in strategic R&D infrastructure through the Programme for Research in Third Level Institutions (PRTLII)**. In doing so, every effort should be made to ensure that these assets have both a capital commitment and an ongoing operational budget commitment to ensure maintenance. This operational budget should seek to ensure that appropriate opportunities are given to external users to access assets that could be useful in research and development projects. Such access can contribute to the operations and maintenance budget for the asset/s in question.

GOAL 4: INNOVATION FOR SOCIAL PROGRESS AND THE ECONOMY

Action 4.5 & 4.10 Support Collaboration across sectors (public and private) to deliver social policy objectives.

The American Chamber again sees opportunities to leverage the DTIF to establish challenge-based innovation projects that challenge the best in enterprise, public sector and the research and innovation eco-system to collaborate to deliver breakthroughs in performance and outcomes. On a smaller scale – engaging in more Small Business Innovation Research (SBIR) programmes that include emerging FDI (small scale, high growth) based in Ireland should be encouraged around existing clusters of industry.

Action 4.11 – 4.26 Sector Comment:

The American Chamber continues to promote investment in translation activity to apply research and development investment⁸. This is necessary to enable valuable research and discovery to impact on new technology or product development in a focused and accelerated manner. FDI support for sharing this type of infrastructure should be explored and developed within an appropriate public-private partnership model. Such infrastructure could include dual purpose test and demonstration platforms for emerging and breakthrough technologies in new areas of application. Investment programmes have already explored such models. For example, the provision of full integrated circuit design and development capability, including access to semiconductor fabrication facilities and services by the Tyndall National Institute is welcome. This provides participating industry with the capability of prototyping new products in the electronics, medical devices, energy and communication sectors.

This form of investment has enabled and supported other sectors including the food/nutritional and biopharma sectors. The success of the Teagasc Moorepark Research and Innovation Centre in the food sector is regarded by

⁸ 'Translation activity' is all activity relating to moving research into practical application.

many leaders in the RDI field as significant. It has contributed to the growth of a high value dairy sector and is noteworthy in bringing SMEs and MNCs closer in pursuit of aligned market and product goals. The American Chamber welcome's the recent investment in Vistamilk and suggest it is a role-model given it is jointly funded by SFI and Department of Agriculture and Food and the Marine (DAFM) – a positive indicator of system-wide joined up thinking which will underpin successful research and growth for the future.

The American Chamber would welcome greater emphasis to be placed on sustainability in the research agenda given the potential negative economic impact of climate change. Areas for deepening work based on established competencies include (but not limited to) – information systems and energy usage, supply chains and packaging, nutrition and the environment, impact of industry 4.0 and changing disease/healthcare patterns in response to climate change

In the pharma sector NIBRT has been significant in supporting the development of resources in biotechnology. This technology centre has the capacity to further support translation by leveraging its industrial bioprocessing facility for process and product development. Translation capacity requires investment and a supportive policy framework. This is particularly relevant to the life sciences where clinical trial infrastructure and capability is required to support high value activity in the research and development cycle.

GOAL 5: THE ROLE OF IP IN INNOVATION

Action 5.1 Publish a revised IP Protocol

While Ireland ranks 6th in the Global IP Index⁹ the American Chamber believes there are challenges in sustaining this position. These include a heavy administrative burden acting as a barrier to linking public and private research. There is a lack of clarity regarding which agencies/ institutions should be approached when initiating a project, something that should be improved with the resourcing of the enterprise liaison functions at Knowledge Transfer Ireland (KTI).

According to the Index, Ireland ranks well in niche scientific areas but is limited in its ability to carry out general research; thus, restricting the potential of research collaboration. Ireland universities have a good record of collaboration with foreign researchers, but these projects are rarely led by Irish scientists which limits the visibility of Ireland's research capacity. The system overall ranked well in the Global IP Index, scoring full marks for systematic efficiency.

⁹ <https://www.theglobalipcenter.com>

Action 5.2 Provide additional resources to improve industry-academic collaboration

Despite the positive progress made under the matrix laid out in Innovation 2020, Ireland still does not score full marks for the commercialisation of IP assets in the Global IP Index. One area identified as a slight weakness for Ireland (scoring 75%) is the emphasis placed on IP as an economic asset within the country. This indicator relates to the extent that the national IP regime recognises the value of IP as an asset and encourages its commercialisation through capacity building and training on the commercialisation of IP. Combined with the administrative barriers discussed above, there is potential to improve the collaboration between enterprise and the public research system to improve this indicator by leveraging and promoting the use of the Knowledge Development Box (KDB) to encourage the exploitation of IP within Irish-based enterprise. In addition, **industry-led initiatives that recognise and build stronger linkages between multinational enterprises based in Ireland, the indigenous SME sector and research centres/Higher Education Institutions (HEI) should be promoted strongly. As an example, the US-Ireland Research Innovation Awards are a joint initiative of the Royal Irish Academy and the American Chamber of Commerce, Ireland.** The Awards recognise excellence in research innovation, creation and invention by an organisation, because of US Foreign Direct Investment (FDI) in Ireland: acknowledging exemplary ideas, originating in Irish organisations, and underpinned by innovative research, that have a strong social and/or economic impact.

Action 5.6 Raise IP awareness

The Global IP Index called out Ireland's IP educational campaigns and awareness raising for particular praise, noting that Ireland ranks highly in terms of perception, awareness and behaviour study for consumer perception of the importance of IP protection. The index notes the success of the Student Enterprise Awards and the BT Young Scientist for raising awareness at school level, and the progress made in involving SMEs through the VIP4SME programme. The American Chamber encourages this activity to the end of the period of I2020.

Action 5.11 Improve patenting options for business

While this action is stalled pending the outcome of a German constitutional challenge, the American Chamber supports the call for the establishment of a local division of the Unified Patent Court in Ireland and the need for a referendum in Ireland to participate in the single European patent system.

GOAL 6 INNOVATING WITH THE EU AND THE WIDER WORLD

Action 6.1 & 6.2 Secure €1.25bn in funding from Horizon 2020

Recognising that Ireland is on track to hit its target, **a continued focus is required to support and engage industry in the timely and bureaucratic process of H2020 consortia formation, funding application and research partner collaboration.** The retention and transfer of this institutional knowledge within the Irish eco-system is critical if Ireland is ambitious to take on more project leadership roles within the next Framework Programme.

Action 6.4 Assess EFSI Potential for Funding for Research and Innovation in Ireland.

Leverage Ireland's growing institutional understanding of the operation of the EFSI by the European Investment Bank to encourage targeted large-scale research initiatives led by industry. **Ireland should establish a target drawdown figure from the European Fund for Strategic Investment (EFSI).**

Action 6.8 & 6.9 Enhance Collaboration with the UK

The American Chamber is of the view that it is timely to update the suite of actions within this domain to take account of the UK's planned departure from the EU. This is a challenge in so far as it disrupts established linkages between Irish and UK institutions, but equally a potential opportunity to tap into talent, innovation leadership and step-up to take the lead in more research programmes in future Frameworks. New metrics should be set in 2019 for the end of I2020 to set the baseline for Ireland's next innovation strategy.

Action 6.10 and 6.11

The American Chamber is hugely **supportive of deeper linkages into the US research system and welcomes positive progress with the US-Ireland R&D Partnership and connections with the US National Science Foundation.** Further, the establishment of 'science and innovation officers' within the Embassy and consular network in the US to strengthen the promotion of Ireland's innovation base and build transatlantic innovation linkages is welcome.

Action 6.16

It is of concern to the American Chamber that the benchmarking of Ireland's innovation system against comparator countries has yet to be initiated and we strongly recommend its commencement and completion within the period to the end of I2020 to inform the next strategy. Learnings should be drawn and shared from Ireland's participation in the Small Advanced Economies Initiative between Denmark, Finland, Ireland, Israel, New Zealand, Singapore, and Switzerland.

GOAL 7: ESTABLISH INNOVATION 2020 IMPLEMENTATION GROUP

The American Chamber recommends that the 'Metrics and Targets' table include as Appendix 2 to Innovation 2020 be amended to **include a line item on awareness of the 'importance of STEM' for the future of work and the awareness of the 'Impact of Ireland's research system'**. Both indicators need to form a baseline to drive strategic actions to improve citizens understanding of STEM and its career opportunities and appreciate the value of research and the impact of investment in RDI (public and private) carried on in Ireland.

In addition, amendments to metrics in area 5 and 6 should include **specific targets for MNC's including those that are research active, number of innovation-led investments won by the IDA and MNC-SME collaborations.**

Finally, to advance the appreciation of the impact of research and development in Ireland it would be constructive to **include measurements/targets for employment, wages and exports attached to research active organisations** to recognise the positive impact of research on business and the economy.