

## Fostering Innovation in Irish Innovation Policy

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### Executive Summary

Over the past decade or so there have been many radical changes in the Irish national system of innovation and how it is administered. To some extent these administrative changes were a consequence of the financial crisis and the subsequent need to control public expenditure. This paper argues that it is now time to reassess these changes and to consider if the innovation system and its governance is fit for purpose for the challenging times ahead.

The management of the Irish system of innovation is now radically out of line with systems in peer, small developed countries such as Sweden, Denmark and Finland. A particular problem is the absence of any independent mechanism for providing expert policy advice to the Government and its agencies on the various aspects of innovation. In large part, this is a consequence of the 2014 government decision to dissolve Forfás (and, with it, the Advisory Council for Science, Technology & Innovation) and to transfer its innovation-related staff into the Department of Business, Enterprise and Innovation. However, the Forfás functions around strategy and analysis have now been so diluted that, for the first time since the 1960s, Ireland does not have a vital element of the national innovation system – a mechanism to provide a continuously updated source of expert policy advice and evaluation on all aspects of innovation.

The main recommendation in this paper is creating a new-style Irish Innovation Council that will take a holistic approach to the formulation and evaluation of policy. A Council drawn from business, academia and government/public service would be in keeping with the approach previously and successfully adopted. Such a Council would need expert secretarial support. A detailed argument for this and the functions of such a body are provided in the paper. Other recommendations are: conducting a Foresight exercise and commissioning an OECD Review of Irish Innovation Policy.

## Introduction

This report begins by contextualising the study before outlining our understanding of what innovation policy is. We proceed to identify a number of gaps in current Irish innovation policy. We then draw conclusions and make recommendations for change.

## The context

Irish industrial policy has achieved a number of significant successes since c. 1960 when the Irish government adopted a new strategy aimed at pursuing foreign direct investment (FDI) and accessing overseas markets. The strategy initially focused on attracting manufacturing plants that provided mainly low-skilled jobs, but, over time, the IDA was successful in attracting R&D and higher-skilled and higher-paid services employment. Along with a continuing emphasis on the development of skills and human capital, that success underpinned the emergence of the Celtic Tiger in the 1990s, brought us through the subsequent recession and ensured relatively quick recovery from the financial crisis that began in 2008.

In some ways, Irish industrial policy has been an exemplar of good strategic thinking and practice. Many aspects of the strategy have been consistent over decades, regardless of the political party in power and succeeding generations of civil and public servants. The companies that have come here have almost always stayed, grown and continued to invest.<sup>f</sup> The strategy has been clear, which has enabled successive governments to ensure that it would be actively supported and energetically pursued by disparate government departments and agencies. For example, significant investments were made in education and research during the late 1990s and early 2000s to attract higher-value FDI functions, in particular R&D.

For a variety of reasons, this reliance on FDI firms and their new or existing technology is now becoming increasingly problematic. A critical issue is that heretofore Irish industrial strategy has been largely underpinned by the innovation activities and policies of overseas firms and their governments (particularly the US) rather than by what is known in economics as ‘endogenous factors’ – i.e. the local and national characteristics and structures across the industrial, economic, social, cultural and political spheres that form the Irish national system of innovation.

Even though Ireland’s largely FDI-focused industrial strategy has achieved much, the country faces a significant range of new and emerging challenges that warrant re-thinking this strategy. The major challenges include:

- Climate change and the need to rapidly decarbonise the economy.
- New digital technologies and the reshaping of work and the economy more generally. In 2018, the [Expert Group on Future Skills Needs](#) noted that one in three jobs in Ireland is at high risk (a probability greater than 70%) of being disrupted by the adoption of digital technologies.
- Automation and AI which are likely to [displace large numbers of workers](#).

- Brexit.
- Growing trade protectionism and an uneasy international trading environment.
- Uncertainty about taxation policy, especially corporate tax.
- Productivity levels in our domestic SME firms lagging far behind foreign-owned firms.
- Population growth (*Project Ireland 2040* estimates that an additional 1 million people will live in Ireland in 2040).
- Growing regional disparities e.g. excessive population growth focused on Dublin.
- An aging population.

### **Innovation Policy – What is it?**

A significant literature exists on innovation policy. In what follows we draw attention to a number of important elements that have guided our thinking:

First, innovation policy should be focused on the longer term and the long-term impact of proposed actions.

Second, two conditions must be fulfilled to warrant policy intervention:

1. Private organisations must prove to be unwilling or unsuccessful in achieving the objectives formulated; i.e. a policy problem must exist.
2. The state (national, regional, local) and its public organisations must have the capability to solve or mitigate the policy problem.

These two conditions show the central importance of the issue of additionality in solving policy problems. Innovation policy pursued by public organisations is sometimes needed. However, policy actors must try to ensure that they do not replace, duplicate or crowd out what private actors (can) accomplish.

Third, innovation is not simply science plus technology plus creativity, but must always be contextualised in situated practices, in particular times and places, where culture and social mood play important roles (Flores 2013, Breznitz et al, 2018). Innovation requires individual commitment, high levels of trust, rootedness and a sense of belonging to a distinct community. By way of illustration, Ireland was perhaps at its most innovative (across many domains) between 1880 and 1920, and this innovation was founded on a deep sense of place and a strong cultural identification (Bradley & Kennelly 2008). More recently, Ireland has punched well above its weight in cultural innovation (whether in film, theatre, music, etc.). The lesson is that to stimulate local innovation, people must know and appreciate who they are, where they are from, and where they are trying to go. Indigenous innovative capabilities therefore depend on a strong cultural and social base, capitalising upon tacit resources embodied in self-knowledge and tradition. In the emerging sustainable age, this deep sense of place, along with an openness to and ability to absorb technological and other strategic changes - both internally and

externally generated - and all fostered by a forward-looking public policy, are important drivers of innovation in Ireland's indigenous enterprises.

Fourth, non-science and/or technology issues and elements such as skills/human capital (including management capabilities) as well as market demand and marketing expertise are key to successful innovation. Thus, policy for innovation and productivity improvement requires a holistic, 'systems' approach that brings together all aspects of government that influence the innovation system, which includes "all important economic, social, political, organisational, institutional and other factors (activities) that influence the development, diffusion and use of innovations" (Edquist 2018).

Fifth, public policy should be evaluated and reviewed on a regular basis.

### **Innovation Policy Gaps**

In this section, we map out what we believe are significant gaps in current Irish innovation policy.

First, there is little discussion around the different ways of thinking about innovation and innovation policy, and the consequential different models and nature of the actors that might, or might not, have a role in innovation policy development and/or implementation. For instance, innovation policy is currently premised on the notion that the state should buy rather than make knowledge (Teagasc is an exception) and that the state's role should be to create and manage markets for knowledge production and consumption. There is little, if any, debate about the merits of this approach or investigation of its downsides (the policy arguably fosters short-term thinking, opportunistic tendering, and militates against institution-building for the longer term). Likewise, there's little discussion on what 'centralisation' might mean in the context of innovation, or on the role of local actors – e.g. local authorities – in innovation policy. This lack of debate can be partly attributed to the disappearance of the innovation policy structures that were in place 8 -10 years ago. Going back even further, Regional Science Councils existed in all the major regional centres - mainly around the then Regional Technical Colleges (now Institutes of Technology).

Second, there is no entity or agency focused on steering and overseeing the long-term efforts of the innovation system's constituent parts. The Irish government's overall long-term policy aims are articulated in *Project Ireland 2040*, which is made up of the *National Planning Framework to 2040* and the *National Development Plan 2018-2027*, though neither of these documents deals extensively with either industrial or innovation policy. The Department of Business, Enterprise and Innovation (DBEI) has produced a number of policy documents<sup>6</sup>, but these invariably take a medium rather than long-term perspective.

Third, an important set of capabilities around policy analysis, synthesis and evaluation has been steadily diluted over time. This has been confirmed by the recent Capability Review Report of the Department (Dept of Business, Enterprise and Innovation, 2019b:

9), which states that the Department’s Strategic Policy Division (SPD) “currently lacks the critical mass of specialist staff needed to support the various and diverse policy business units across the Department”. This has resulted in “a reduction of in-depth analysis of individual sectors of the economy”, which in turn “impacts the Department’s ability to influence across the government system”. (See Appendix 1 for the report’s view on how this will impact future industrial and innovation policy).

The Department has responded to this analysis by setting out a plan to restructure the Strategic Policy Division (Dept of Business, Enterprise and Innovation, 2019c). The proposed title of the Division is now the Enterprise Strategy, Competitiveness & Evaluation Division, and consists of the following units:

- Competitiveness and Productivity
- Labour Market and Skills
- Digital Single Market and Digital Economy Policy
- Monitoring, Evaluation and Research support
- Enterprise Policy

It is difficult to see how these changes address the capacity concerns and indeed the focus on measuring and evaluating suggests a further dilution in the Department’s core capability around strategy and analysis.

Further evidence of this dilution is the fact that the Advisory Council for Science, Technology & Innovation (ACSTI) – which was established in 2005 as a successor body to The Irish Council for Science, Technology and Innovation (ICSTI) – is now effectively defunct (while the website still exists nothing has been posted since 2012).

Fourth, national policy for research and innovation no longer seems to be leveraging external advice and input in the formal and intensive manner that was done previously. For instance, the review of Irish science policy undertaken by OECD in the 1960s provided a foundation and stimulus for the developments over the following decades, while work at the Irish Council for Science, Technology and Innovation (ICSTI) in 1995 led to the establishment of (i) the Technology Foresight Exercise, (ii) the Advisory Council for Science, Technology and Innovation (ACSTI), (iii) Science Foundation Ireland, (iv) The Research Councils for Science, Engineering and the Social Sciences, (v) the Interdepartmental Committee on Science, Technology and Innovation, as well as other structural changes.

Fifth, good policy should be based on good research, which requires good data. In particular, Ireland’s performance on innovation indices must be treated with a high degree of scepticism given (a) how the data is skewed by the FDI sector and (b) the strategic need to present a positive story for potential investors.<sup>h</sup> This dearth of data is reflected in the absence of research on how indigenous businesses scale up, on the nature of innovation in indigenous firms, on the differences in innovation between

sectors, and on constraints in the technological and supply chain relationships between Irish SMEs and multinational companies.

In the past, Forfás undertook two types of activities that enabled evidence based policy interventions - regular surveys of Business Sector R&D and external independent evaluations of the various innovation programmes. These evaluations were conducted in line with best international practice in the field.

The CSO continues to prepare what used to be known as the Community Innovation Survey for Ireland under the heading of *Innovation in Irish Enterprises*, the latest issue of which relates to the period 2014-2016. The CIS is an EU-wide initiative and was originally carried out jointly in Ireland by the CSO and Forfás. The decline in the level of analysis is evident when one compares the current version (April 2018), which is a 12 page PDF on the CSO's website, with the April 2012 version, which was an 80+ page publication. This went into much greater detail on the differences in firm performance of R&D but in particular into the non-research and non-technological aspects of innovation such as the diffusion of knowledge and technology into firms, organisation and marketing activities and the barriers being faced by SMEs.

The absence of timely, granular and reliable data and analysis constitutes a gap in policy knowledge making it exceedingly difficult to assess the ways in which future policy interventions might be used to shape activity. This is a major criticism of current practice.

Sixth, the policy heretofore has emphasised funding basic scientific research, even though it has long been recognised that basic research doesn't necessarily lead to commercial innovation. In the Irish context, this is being partly addressed by efforts aimed at deepening industry involvement in the sixteen SFI-funded Research Centres as well as developing fourteen new Technology Centres. However, this shift – from science to engineering – has typically under-appreciated the fundamentally social nature of technology-in-use. In contrast, Germany has a [constellation of different types of research organisations](#) populating the basic-applied research spectrum, with a diverse range of funding models.

Seventh, the strategy has meant that innovation policy has largely overlooked the needs of many indigenous businesses, in particular in terms of the role innovation policy plays in raising their overall level of productivity. This is long-standing issue that has featured in a series of government reports from the Telesis Report (National Economic and Social Council, 1982) to the Culliton Report (Industrial Policy Review Group and Culliton, 1992) to the Government's [Future Jobs Strategy](#) (Dept of Business, Enterprise and Innovation, 2019a), which has "improving SME productivity" as one of its five pillars.

Eight, the emphasis on STEM research has resulted in very little investment in research in Arts, Humanities and Social Sciences. Most recently, all of the Research Priority Areas announced in early 2018 are in STEM, which ignores important issues such as housing,

education, public administration and the wider public good. The crash of 2008 cost the Irish state €60bn, but the cause of the crash was more to do with topics routinely covered in social science – e.g. corporate governance, banking regulation, property bubbles, neo-liberalism, etc. – rather than the preoccupations of STEM researchers. A similar point was made by the International Panel that reviewed the implementation of the 2015 Research Prioritisation Exercise (Dept of Jobs, Enterprise and Innovation, 2015). The logic here is not to reduce spending on STEM research, but to invest more heavily in developing our collective knowledge and understanding of other important domains.

## Recommendations

In the light of the policy gaps identified above, and the urgent need to plan for a potentially very different future, we make the following recommendations:

### **1. Establish an Innovation Council**

The members of such a Council should be drawn from a wide range of interests – industry, academia and the public service. The functions of an Innovation Council should include:

- Advising Government on policy for science, technology and innovation
- Promoting public and private investment in research and development
- Encouraging a co-ordinated application of innovation in all aspects of society
- Ensuring that public policy for science, technology and innovation addresses all key elements of the innovation system

Establishing a Council, and ensuring it has the necessary autonomy, as well as financial and professional resources (that is, policy analysts, technology specialists etc.), will require a significant political decision. It will require a decisive change from the existing system and therefore a willingness to upset the status quo.

An Irish Innovation Council might have a role similar to the to the [Climate Change Advisory Council](#) or the [Irish Fiscal Advisory Council](#), or it could operate out of an existing government department. The Council might be located within the DBEI, though [Sweden's National Innovation Council](#) is under the auspices of the Office of the Prime Minister while Finland's [Research and Innovation Council](#) is an advisory body chaired by the Prime Minister. Hence, probably a preferable option, given the holistic nature of innovation, is to create a new council within NESDO as a counterpart to NESC (which is now the sole council within NESDO). These various options could be considered as part of the imminent review of Innovation 2020. Regardless of its location, such a Council would need a level of autonomy and independence as well as adequate financial and professional resources (in particular, 'dedicated' policy analysts). There is much experience in establishing such structures within the Irish civil/public service.

After a detailed consultation process, the NI Executive launched [innovateNI - Innovation Strategy for Northern Ireland 2014-2025](#) in September 2014. This stressed that ‘Innovation is more than R&D’ and quoted research ‘that suggests that less than 20% of investment in innovation by UK firms is in the form of R&D’ and ‘If firms invest in skills, leadership, design, branding, training or marketing – they are investing in innovation. The potential of innovation to ‘Grow more indigenous high tech companies’ is also highlighted, as is the growing importance of innovation in the public sector.

This long-term strategy (but one that was seen as being of immediate importance for the future of the NI economy) envisaged the establishment of an Innovation Council. This would be crucial ‘to drive forward the aims and objectives of this strategy’ which ‘will require sustained leadership at the most senior levels in the private and public sectors’. For a variety of reasons, most obviously the 3-year suspension of the Executive and Assembly that has just ended, this proposal has not to date been implemented. The potential for coordinated or even joint action on an all-island basis in defining and implementing innovation strategy and the setting-up of two complementary or even one overall Council commends itself at this critical time in the industrial and overall economic and social evolution of both jurisdictions on the island.

## **2. Convene a National Foresight Exercise.**

In the context of climate change and the ecological crisis, it is important that we have formal ways of planning for the longer-term. Traditionally, Ireland has benefited from Technology Foresight and economic planning exercises – the Technology Foresight exercise carried out in the late 1990s and published almost 20 years ago was pivotal in creating Science Foundation Ireland – and it is now appropriate to conduct a similar forward-looking exercise, but with a broader remit. As well as addressing climate change and the ecological crisis, creating an equitable and sustainable digital society should also be part of the remit. Such an exercise might be conducted under the auspices of the proposed Innovation Council, but it would probably be more appropriate, given time constraints and the need for a broader remit, to initiate the exercise promptly in partnership with the Department of An Taoiseach.

In addition to a Foresight Exercise, a range of ‘futures’ reports should also be commissioned to help shape debate and open public interest in such things as innovation in social media, robotics, AI, etc., as well as macro-level issues such as climate change, inequality, financial regulation, monetary systems and the like, which require international or global actions as well as state-level interventions.

## **3. Commission a Review of the Irish Innovation System by the OECD.**

The OECD has produced a series of [Reviews of Innovation Policy](#) which provide a comprehensive assessment of the innovation system of individual OECD members, focusing on the role of government. Thus far, the OECD has reviewed 22 countries. The OECD provides concrete recommendations on how to improve policies which have an impact on innovation performance, including R&D policies. Each review also identifies

good practices from which other countries can learn. It would be timely, in the context of the upcoming review of ‘Innovation 2020’, for Ireland to commission the OECD to carry out such a study.

In a parallel exercise (SME and Entrepreneurship Policy in Ireland, October 2019) the OECD has recently carried out a study focusing on productivity in Irish SMEs. This makes a number of recommendations on innovation, which is the major contributor to higher productivity. Again the Organisation’s recent (February 2020) Economic Survey of Ireland, has a whole section on the importance of technological diffusion. Finally, in 2013, an OECD Regional Development Working Paper ‘The Case of Ireland-Northern Ireland – Regions & Innovation: Collaborating across Borders’ made an important contribution to that discussion. All of these would be taken into account in the Review of Innovation Policy envisaged in this paper.

## Bibliography and Appendices PDF



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<sup>e</sup> Any opinions expressed here are those of the author(s) and not those of UCD CITO. The Research Centre itself takes no institutional policy decisions.

<sup>f</sup> For instance, Pfizer Ireland employed just 16 people when it opened its first site in 1969 and now employs 3,700 across six sites; Apple Ireland employed 60 people when it opened its plant in 1980 and now employs over 6,000; Intel Ireland now employs more than 4,500 and has invested over \$15 billion in Ireland since it arrived here in 1989. And the success of these companies has attracted others in a snowballing effect: for example, more than 56,000 people were employed in the BioPharma/MedTech industries in 2018 and six of the top 10 pharmaceutical companies in the world are based in Cork. In June 2018, the American–Ireland Chamber of Commerce estimated the value of US investment in Ireland was €334 billion, exceeding Irish GDP (€291 billion in 2016).

<sup>g</sup> The more relevant publications, available at <https://dbe.gov.ie/en/Publications/>, are:

2015: *Innovation 2020*

*Enterprise 2025*

2018: *Digital Transformation: Assessing the Impact of Digitalisation on Ireland's Workforce*

*Investing in Business, Enterprise and Innovation 2018-2027*

*Research Priority Areas 2018 to 2023*

*Action Plan for Jobs 2018*

2019: *Future Jobs Ireland 2019*

*Ireland's Industry 4.0 Strategy 2020-2025*

*SME and Entrepreneurship Policy in Ireland* (undertaken by OECD)

<sup>h</sup> Michael Hennigan, in his [finfacts blog](#), has consistently and compellingly shown how far the official representation of the Irish economy diverges from reality.