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Submission to the Interdepartmental Committee on Science, Technology and Innovation, Ireland, in respect of the public consultation¹ paper and process on the development of the Successor to Strategy for Science, Technology and Innovation Of 2006.

This is an important issue and the Committee should consider the positives and negatives of the past decade of the 2006 strategy that was based on the Enterprise Strategy Group report of 2004².

This strategy should be developed in the spirit of the Whitaker era³ as it is the basis of the key enterprise policy and involves significant public funding.

In the consultation paper:

- The use of the European Commission's "Indicator of Innovation Output" is highly misleading as it is based on data distorted by tax avoidance (artificial services exports of over €40bn⁴ arising from the "Double Irish" tax scheme). The EC also includes mainly US companies that are Irish for tax purposes in its data⁵ reports;
- There is no recognition that patenting has not materially changed since 2006.

It is also important to be aware that in the ICT sector almost half the positions are in non-tech functions.

International Data Corporation (IDC) estimated in 2013⁶ that there were 46,000 tech professionals working in the broad ICT (information, communications, telecoms) sector in 2013 — almost half the sector total and 2% of the overall workforce — and there were 25,000 in the rest of the economy.

This is a short note as it's not clear if this public consultation process is a serious one — the Committee appears to have left itself the option of publishing submissions or not and the short time period coupled with the lack of publicity on the consultation raises questions on its perceived value.

¹ [Consultation Paper For Successor to Strategy for Science, Technology and Innovation](#)

² [Ahead of the Curve - Ireland's Place in the Global Economy](#) - 2004

³ [Politicians, the Bureaucracy and Economic Policymaking over Two Crises: the 1950s and Today](#) - [As far back as 1987, TK Whitaker said that he would like to see "a restoration of the old (civil service) principle that you were independent of ministers. You gave your views on any new proposals fearlessly, critically, honestly. You did not care whether your views were likely to commend themselves to the minister, whether for their own sake or politically. Once a decision was taken by minister or government, however, you carried it out as loyally and efficiently as you could. That was my understanding of the function of senior civil servants but I'm afraid it has been undermined. The young men who are preoccupied about this generate deep disappointment in me by telling me that that was an old world that has vanished. In the new world, the civil servant is all the time trying to please the minister, over-conscious of what might be politically acceptable, arranging the options so that they will appeal, rather than in strict order of eligibility"]

⁴ [Irish Economy: Ireland's ephemeral services export boom](#)

⁵ [EU Industrial R&D Scoreboard: Tax-inverted brass-plate companies dominate in Ireland](#)

⁶ [Addressing Future Demand for High-Level ICT Skills](#) - - Forfás / EGFSN (Expert Group for Future Skills Needs), November 2013



Innovation in the broad sense is very important for the Irish economy but the argument that a high level of scientific research funding is crucial for future prosperity must be evidence-based not wishful thinking.

The Committee has a choice of producing an aspirational brochure that will please political leaders or a strategy that:

- Has an unspinned assessment of the strengths, weaknesses, failures, and the challenges ahead;
- Examines why the 2013 target to be a recognised world-class knowledge economy was not achieved;
- Benchmarks Ireland against the small knowledge economies in Europe such as Denmark⁷;
- Explains why the international patenting record is poor and has not materially changed in the past decade — here⁸ and here⁹;
- Puts science policy in the context of dependence on foreign-owned firms which in the services area mainly focus on administration functions;
- Recognises the low level of R&D activity by this sector and the low level of cash support for academic research — 2013 international study put Ireland last of 30 countries¹⁰;
- Recognises that Irish public-private research collaborations are mainly dependent on the taxpayer and the typically large number of participating firms suggest that no one firm is confident about outcomes¹¹;
- Recognises also that the economy would be as closed as Greece's absent foreign-owned exporters¹² while these foreign firms will not result in the creation of a knowledge economy;
- Sets realistic targets unlike the fanciful Science Foundation Ireland (SFI) 2012 target: "in which Ireland in 2020 is the best country in the world for scientific research excellence and impact";
- Puts a value on the future public science policy that cost almost €24bn (inflation-adjusted) in the decade to 2011¹³;
- Explains how the commercial outcomes of research will ever scaleup in Ireland when typically a startup with international potential and VC funding is acquired by a foreign firm before the taxpayer gets a return on investment¹⁴;
- Includes an independent assessment by overseas experts who fully understand the distorting impact of tax avoidance on innovation metrics;
- Understands that the Government's goal for Ireland to become the "Digital Capital of Europe" will remain a fatuous one if it's dependent on US tech firms mainly engaged in administration in a place dubbed Silicon Docks¹⁵;
- Understands the competitiveness in evolving so-called patent box tax regimes¹⁶ and the requirement to carry out research that is at a high level;

⁷ [Ireland 2016: "Best small country in the world" for business? - a FAIL](#)

⁸ [Irish patent filings at European Patent Office fell in 2014](#)

⁹ [Irish resident patenting not suggestive of 'world class knowledge economy'](#)

¹⁰ [Innovation Index: Ireland behind Portugal in business funding of academic research](#)

¹¹ [Innovation: Irish Government to fund 79% of €50m joint industry research in Cork](#)

¹² [Ireland has 4,000 exporters; Denmark has 30,000](#)

¹³ [Irish science policy budget](#)

¹⁴ [The innovation slowdown at the US tech giants](#)

¹⁵ [Dublin's Silicon Docks: Separating hype and reality](#)

¹⁶ [Germany and UK agree to restrict 'patent box' tax incentives to local R&D](#)



Ireland is among the poorer countries of the Euro Area¹⁷ and it's fanciful that it can become a world leader in scientific research while it is acknowledged that science spending has boosted some Irish science competence data.

Dependence on foreign firms is not a route to wealth and the problem with the grandiose ambitions is that we need to address the enduring poor performance of the indigenous international sector first.

The glaring flaw in the 2010 report¹⁸ produced by the 28-person Innovation Taskforce was that a huge number of new startups were expected to have big international success with a tiny domestic market or none — **armchair experts often do not appreciate how important domestic selling experience is for overseas success.**

The report said "that the implementation of the recommendations [] supported by a favourable economic context, has the potential to contribute to net job creation in high-tech firms of the order of between 117,000 and 215,000 between now and 2020. This excludes the creation of additional jobs through the multiplier effect (i.e. every job created will have spin off job creation through increased company and individual expenditure on goods and services)...**Were Ireland to achieve levels of employment in high-tech firms comparable with Silicon Valley, the numbers would increase substantially.** More realistically, Ireland might aspire to be a leader in Europe and aim to have 15% of employment concentrated in high-tech firms. This would result in almost 346,000 people being employed in high-tech firms by 2020 — a net increase of 215,000 jobs over the period."

To match Silicon Valley in terms of tech jobs in an economy with a tiny indigenous research base and with less than 30% of foreign firms doing even meaningful research, was fanciful enough but to expect an unprecedented level of new firm creation given that 70 to 90% do not survive beyond their seventh birthday, was to use a vernacular: nuts.

The oldest high tech cluster in Europe is the so-called Silicon Fen in Cambridgeshire, England, which developed more than 50 years ago in the area around Cambridge University. It has over 50,000 jobs in 1,500 firms, with average employment at 35.

The Financial Times wrote in 2006 that a comparison between Cambridgeshire and Santa Clara County in Northern California showed that, for the same geographic size, economic output in Silicon Fen was six times smaller and average earnings less than a third of Silicon Valley.

- 40% of firms were micro and employ 1-5 people;
- 20% of firms were micro and employ 6-10 people;
- Only about 2.5% of firms employed more than 200 people.

Israel shows that a successful high tech sector can have a limited impact on an economy¹⁹.

The contraction of manufacturing in the UK has resulted in a fall in R&D; a British scientist in 1952 outlined how a microchip would work and ARM Holdings Plc, the UK's most successful high tech firm,

¹⁷ [German per capita standard of living highest in Europe; Ireland below EU average](#)

¹⁸ [Innovation Taskforce report - 2010](#)

¹⁹ [Israel's Startup Nation not a jobs engine; Nor is Irish high tech](#)



has its technology in more than a billion electronic devices sold but it has a payroll of less than 3,000 compared with Microsoft's 100,000+. Again in the UK, the discovery of the so-called miracle material graphene in Manchester does not guarantee that the UK will make significant commercial gains from it.

Less than 4% of UK startups have 10 or more employees 10 years after their creation according to a report on scaling-up companies that was commissioned by the British government²⁰.

The greatest potential for value added in Ireland is in the food and drinks sector and these are the sectors where the main focus of Irish applied research should be. However, this crucial sector is operating under par²¹.

Ministers dream of creating local high-technology giants like Google or Microsoft but any spinout from university research with potential is acquired by a foreign firm **and there has been no scaling up of a local high-technology or life sciences firm in the past decade.**

The consultation paper says that around 300 firms account for almost 70% of total R&D expenditure in 2012. 13% of foreign-owned firms (107 firms), each spending over €2m, account for 88% of R&D spending in the foreign-owned sector in 2012 (over 70% of business R&D);

Forfás said in a report in 2004 that analysis of the profile of Irish-based companies engaged in patenting showed that none of the top 50 exporters were among the top ten foreign-owned patenting companies, and leading computer manufacturers were entirely absent. Only one of the top 15 pharmaceutical exporters (Abbot) appeared on the list — **there is no evidence that this situation has changed.**

Wonder how Austria can have one of Europe's highest per capita standard of living and consistently have had one of Europe's lowest jobless rates since the 1960s despite having one of Western Europe's lowest graduate ratio in its population and no world-class university?

Innovation is much more than using basic research to produce successful products. It also includes design, marketing and packaging.

The drugs industry is very different to others: two of the greatest inventions of the 20th century — the airplane and the transistor — were not dependent on scientific research.

Achille Gaggia filed an Italian patent application for his espresso machine in 1938 but it was an American marketing executive who made Starbucks a global brand.

In a 2014 Sunday Independent interview²², Craig Barrett, former CEO of Intel, was asked could Ireland attract the really valuable Google and Twitter type R&D and innovation functions as well as supplying hewers of wood and drawers of water?

²⁰ [Startups vs Scaleups: 4% of UK startups have 10+ employees 10 years later](#)

²¹ [Benchmarking Irish food & drinks industry in 2015 - Part 1& 2](#)

²² [Ireland needs to up its game on innovation, warns ex-Intel boss](#)



"No," Barrett replied. "I think to a degree it's a matter of numbers. You can have an Intel invested here as a creator of jobs but it's primarily a manufacturing investment."

"Those are good paying jobs and I think the Irish are very happy to have them and Intel is happy to be here. Intel also has engineering applications here with 300 employed in Shannon. But that's small compared to the engineering base it has in Santa Clara or Portland or Arizona, for example, and that's just a matter of numbers.

"The multinationals are going to go where the resources are. And the bulk of resources are not in Ireland because it's a small country of four or five million people. Look at it on the positive side, at least they're putting their HQs here."

Israel is the preferred choice of US companies, including Intel (half its 10,000 payroll work in development) for the location of strategic R&D centres.

in 2013 forty American firms accounted for about two-thirds of the value of Irish exports.²³

²³ [Forty American firms account for two-thirds of Irish exports](#)