



**GOVERNMENT WHITE PAPER ON ENTERPRISE POLICY
SUBMISSION BY THE IRISH ACADEMY OF ENGINEERING
JULY 2022**

Introduction

The Irish Academy of Engineering (IAE) seeks to advance the well-being of the island by marshalling the expertise of eminent engineers to provide independent advice to policy makers on matters involving engineering and technology.

The Academy is an all-island body with members drawn from Northern Ireland and the Republic of Ireland

The IAE operates a committee structure. This submission was prepared by the Enterprise, Innovation and Education (EIE) Standing Committee. Its members include current and former senior leaders from FDI, indigenous technology companies, third level education and the public sector.

The Academy welcomes the opportunity to make a submission to the White Paper on Enterprise. It also intends to use the convening power of the Academy to facilitate a dialogue on this subject. Enterprise policy is a complex topic. It is difficult to neatly separate the many factors which will deliver success. We favour a well-moderated discussion involving the key stakeholders.

The Academy has previously convened such an event on Innovation in Dublin Castle in 2019 (Full details of this and all our activities and publications are on our website www.iae.ie).

Many of the points made in summary below will be further elucidated in a paper soon to be published by the Academy entitled: "Trends that will Shape the Future of Work and Employment in Ireland in 2040".

Past Success

In considering future Enterprise policy, it is worth reviewing those factors that have contributed to past success. Ireland's economy has been transformed over the last 50 years, driven by significant and sustained Foreign Direct Investment, the development of a global agribusiness sector and, more recently, by a growth in indigenous, technology-driven companies.

This success has been driven by:

- Consistent pro-enterprise, pro-trade policy, which has built a reputation for Ireland as a "safe pair of hands" for inward investment, particularly when global dynamics have created uncertainty;
- A strong set of investment incentives, primarily taxation-based, which have been sustained over a long period, providing certainty to FDI companies;
- A strong pipeline of talent from a third level education system that has been well tuned to the needs of enterprise;
- A focus on emerging, growth industries: (in sequence) pharmaceuticals, ICT, medical devices, traded services (data services, fintech, software and shared services) and biotechnology;
- Strong leadership within the Irish FDI subsidiaries driving continuous transformation, ensuring those subsidiaries responded successfully to change and moved steadily up the value chain - as much as 70% of new employment annually has come from regeneration within the installed base of FDI rather than new arrivals;
- The emergence of clusters focussed on particular sectors, which include large FDI companies, indigenous suppliers, startups and third level research; and

- Significant investment in third level research, funded nationally and via EU programs, with the intention of creating research centres of scale focussed on technologies that will drive future enterprise.

All of these factors remain relevant to future Enterprise policy.

Key Trends

We have identified **5 key trends** that we are confident will shape Enterprise into the future:

1. **Decarbonisation/Climate change:** The existential challenge of climate change and the opportunity to create a decarbonised economy and society. Also, the need for enterprise to adapt to the climate changes that will inevitably occur.
2. **Technology:** The emergence of multiple technologies which are maturing, interconnecting and converging. Already, medical devices, pharmaceuticals and ICT are being combined to build innovative new products.
3. **The Fourth Industrial Revolution:** Developments in ubiquitous telecomputing (internet of things etc.), servitisation and new technologies such as additive manufacturing will impact hugely on industrial systems. A significant number of traditional, large scale manufacturing plants (that Henry Ford would still recognise) may give way to highly distributed “micro-factories” that are located closer to the point of consumption.
4. **The Circular Economy:** The reality of diminishing natural resources and the need to migrate to a circular economy. This creates, for example, the need for product design to consider the entire lifecycle of the product and for the actors across the lifecycle to cooperate more closely, likely to be greatly enabled by ICT. We need to be involved from the beginning in the emerging “green tech” sector, as we were with med tech and aviation leasing.
5. **Remote Working:** The opportunity to facilitate remote working, which has been highlighted during the Covid crisis. This breaks the traditional affinity between place of work and place of residence, and offers new opportunities to FDI to access talent.

Recommendations

Our recommendations on Enterprise policy factor in these trends but resist the temptation to “crystal ball” the future, i.e. to predict with any level of precision which sectors will emerge as the future winners. Rather we are focussed on policy that will provide the necessary context for Enterprise to thrive regardless of who those winners are.

Our recommendations are:

1. Raise awareness

Ireland is fortunate to have a strong, modern enterprise base. As noted earlier, the country has built strong manufacturing and service capabilities over decades and hosts a disproportionate share of top global firms in high tech industries. However the global trends indicated above will disrupt the existing base, with smaller SMEs being particularly vulnerable. There is a real threat to our base; a real threat to our existing model. Of course, new opportunities will also emerge. Government and employer/employee bodies must raise awareness of the scale of change, and the level of investment and reskilling required to respond to this change, over the next decades.

2. Invest in Infrastructure

Basic infrastructure – energy, transport, telecommunications, water - is a fundamental requirement for enterprise. Investment in these areas must be sustained, regardless of the economic cycle. Energy security in particular is of critical interest to investors. A secure supply of energy (transmission as well as generation) with a clear path to renewable forms can be a differentiator for Ireland. Cybersecurity should also be included in infrastructural planning – it has emerged as a critical enabler for enterprise.

3. Make Ireland a location of choice - attracting and retaining talent

Human capital will be the primary driver of high value enterprise, regardless of which sectors emerge as the winners. We see today that access to human capital rather than, for example, level of grant aid is the highest priority for FDI.

Human capital is now more mobile than ever, and that includes our own brightest and best as well as top international talent. Enterprise will locate where talent exists (rather than vice versa) and that talent will locate based on lifestyle. Therefore, those regions that offer a compelling lifestyle will be the winners. Cities that are open, diverse and collaborative have long been dynamic engines of economic growth. To make Ireland a

location of choice for creative, innovative talent we must now develop and promote a lifestyle value proposition around infrastructure, the environment, affordable and accessible housing, health, education and leisure. In addition, technology can allow those living and working anywhere in Ireland to move (virtually) from the periphery of global economic activity to the centre. This is fundamental to delivering on the regional balance goals of the NDP.

Note that remote working also opens up the opportunity for enterprises based in Ireland to employ skilled workers located outside the country, an opportunity which might become significant if we cannot provide affordable accessible housing

4. Invest in Education and Skills

Global trends will force difficult transitions for many workers. Those transitions require proactive investment in developing a new wave of agile learners. Our higher and further education institutions have a critical part to play. Their education, training and research activities drive creativity and innovation. Top class graduates and apprentices are the raw material required to navigate and benefit from global changes. We need greater flexibility in our education system – it must be prepared to adapt course material and delivery mechanisms to facilitate lifelong learning. That flexibility will help ensure broad participation in lifelong learning, to include those working in SMEs who are at greatest risk from technology shifts. We must also ensure that we are successfully engaging the entirety of the available talent pool to support our STEM sectors. Despite numerous initiatives over the past 20 years a persistent gender imbalance exists and a fresh focus is required to address this. This is not just about equal opportunity, it is about maximising the talent pool.

To grow the talent pool we need to work harder to promote STEM to second level students. We need students to be aware of the career opportunities in technology and therefore to opt for STEM subjects. Industry and academic researchers can help with this. It is also critical that our STEM teachers are well qualified and passionate about their subject.

Beyond technology skills, we need to invest in management and leadership training. This has proven to be a major factor in the growth and resilience of our FDI sector. Those management and leadership skills will be needed across our entire enterprise in order to deal with the disruptive forces that will challenge it. Startups built on technology innovation also require business innovation and entrepreneurial skills in order to scale.

Investment in education and training must facilitate excellence. Today, our Higher Education Institutes are underfunded, resulting in poor infrastructure and unsustainable staff student ratios. Funding for the Irish third level system lags well behind other countries in Europe and around the world. The funding model for the sector needs to be addressed to allow Ireland to benefit from emerging trends.

5. Build an Innovation Culture

Over the last 20 years national competitiveness has been improved through the technology centres of Enterprise Ireland/IDA and the research centres of Science Foundation Ireland. These centres were well-aligned to the priority areas identified by government, thereby driving economic activity. However in light of the emerging disruptive technology changes we now need to revisit our priorities and funding for research to align better with global trends.

We also concerned that, while at the aggregate level, our competitiveness levels are well-ranked internationally, our SMEs lag well behind the FDI sector. We need to identify the root causes for this and, where necessary establish innovation structures and funding supports that are specifically tuned to the needs of this sector. The Academy has previously highlighted the need for an Innovation Council and believes such an initiative would act as an important policy initiative to support Enterprise.

Conclusion

The Academy commends this submission to the Government and is available to brief on its views in more detail at your convenience.