



THE INSTITUTION OF ENGINEERS OF IRELAND

SUBMISSION TO

ENTERPRISE STRATEGY GROUP

OCTOBER 2003

INTRODUCTION:

The Institution of Engineers of Ireland (IEI) represents the engineering profession on the island of Ireland at both national and international level. With 21,000 members it is the largest professional body in the country. Engineering professionals across all disciplines in both the private and public sectors comprise by far the largest element of the scientific and technological community in Ireland.

IEI is very much aware of the critical role engineers and technicians have played in the industrial and economic success experienced over the past decade in this country and of the essential role engineers play in infrastructure development and the delivery of services to industry.

We believe that a continuation of this key role by the engineering profession will be critical to the delivery of a successful strategy for growth and employment into the future and welcome the opportunity to provide this input to the Enterprise Strategy Group.

We summarise below what we believe to be some of the critical issues to be addressed by the Group in completing its report to An Tánaiste.

1. **PROMOTE AND INVEST IN SCIENCE, ENGINEERING & TECHNOLOGY AND IN EDUCATION:**

A highly educated workforce and a top quality education system must be at the heart of any realistic aspiration to Ireland becoming a knowledge-based society and sustaining a competitive modern economy. Engineers and Scientists will continue to play a central role in innovation and enterprise development in the Irish economy. However, there are significant problems in attracting second level students into engineering and scientific careers.

One of the key factors contributing to the decline in interest in careers in engineering and science by second level students is the low uptake rates of the physical sciences and higher level mathematics at second level. We are also conscious of the need to ensure that the quality of second-level students entering engineering degree, diploma and certificate level programmes, is sufficient to enable them meet the required standards and to minimise drop-out rates.

IEI therefore welcomed the report and recommendations of the Task Force on the Physical Sciences established by the Minister for Education & Science. The Report is balanced and comprehensive and the recommendations lend themselves to ease of implementation, provided support is forthcoming from Government. The delay in implementing the recommendations of this Report in full is a cause of significant concern, and will have negative consequences for national competitiveness and industrial growth through the present decade and beyond. In their Report to An Tánaiste, we would strongly urge the Enterprise Strategy Group to address the issue of the promotion of the physical sciences and mathematics in second level and the promotion of careers in engineering and science.

In addressing the issue of Ireland's education system, the Group should recognise that in a knowledge based economy where industry is focussed on high-level technology and research, it is essential that the higher education system produces world class engineers and engineering technologists.

Recent statements from the engineering community in Europe and the US indicate that the education of the professional engineer should be through a five-year Masters degree as is currently the case in many European countries. The Institution recommends that, in the context of the knowledge-based economy, and to ensure that Irish engineers are not at an educational disadvantage, our four-year Bachelor degrees in engineering should now be upgraded to five-year Master degrees.

It is equally important that our Institutes of Technology produce engineering technologists to a higher standard than the present National Diploma in Engineering. Therefore, the Institution recommends that three-year programmes in engineering technology leading to a Bachelor degree should be established in our Institutes of Technology and universities.

This is an issue of considerable importance and the Institution will shortly publish a position paper on Ireland's implementation of the Bologna Declaration, and will forward a copy to the Enterprise Strategy Group.

2. PROMOTE AND INVEST IN RESEARCH & DEVELOPMENT:

If Ireland is to stimulate enterprise and innovation and move up the value chain in terms of industrial development and technical services, we must invest significantly more than at present in research and development. R + D investment is essential to all areas of Irish industry and all engineering and scientific disciplines and should cover applied as well as pure research. Indeed, for a small economy such as Ireland, investment in applied research may prove more beneficial than investment solely in pure research, which of its nature is more uncertain and long term in producing a return to the economy.

The National Competitiveness Council and IDA, among others, have highlighted the importance of investment in innovation and research and development, to Ireland's future industrial and economic success. Government has recognised R + D as a key success factor for Ireland in the National Development Plan. For the first time, serious levels of support for research in Ireland have been made available and the Institution fully endorses this policy. However:

- The build up of expenditure in the SFI Programme has been too slow
- Capital expenditure under the PRTLII Programme stalled during 2003
- For financial reasons it was not possible to sustain the strong rate of development of the IRCSET Programme in 2003

These are causes for major concern, which suggest that the NDP targets (adjusted for inflation) may not be achieved.

The Irish Council for Science, Technology and Innovation (ICSTI) has established a Commission for Research funding in Ireland in the last year. The Institution welcomes the proposal that there will be a high level strategic co-ordination of research at Government level. A key to success in Ireland's Enterprise Strategy will be an urgent improvement in the country's competitiveness in Research and Development. Total national spending on R + D must be increased from the current level of 1.4% of GDP to over 3% by 2009.

An allied issue which must be addressed is the need to encourage the development of significantly more patents by Irish companies and to review Irish legislation in relation to the ownership of intellectual property.

3. INVEST IN INFRASTRUCTURE:

Ireland's infrastructure comprises more than half the country's total wealth and forms the basis for national competitiveness and economic growth. The vision of the National Development Plan was to ensure that Ireland would remain competitive in the global international marketplace. Based on the 2002 National Competitiveness Report and on the 2003 World Competitiveness Yearbook, it is clear that Ireland's competitive position not only has not improved but has deteriorated (see the attached IEI May 2003 Submission to Government on the Mid Term Review of the National Development Plan).

Failure to address the infrastructure deficit will fatally undermine Ireland's attractiveness as an investment location and its potential for enterprise development and economic growth. This view has also been supported by the ESRI's Medium Term Review, which argues that the Government should prioritise its infrastructure programme over other calls on the public finances.

The engineering/construction industry has geared up substantially to tackle infrastructure development projects and a slowing down of investment will put these resources in jeopardy. It would be of serious concern, and a missed opportunity, if the current favourable construction industry and interest rate conditions were not used to increase the speed at which the country's acknowledged infrastructure deficit is tackled.

As Ireland seeks to progress from being a low cost manufacturing base to becoming, and remaining, a location attractive to higher value investment our infrastructure deficit, including IT infrastructure, will be all the more evident to international companies and will hinder the efforts of the IDA in winning investment and of Enterprise Ireland in growing indigenous companies.

Where public finances are not available, consideration should be given to increased borrowing, charges, development levies and Public Private Partnerships

to fund implementation of the NDP. The ESRI Review suggests that funding could also be facilitated by diverting payments from the National Pensions Reserve Fund into infrastructure development in the short to medium term. The IEI supports the view that monies from the Pensions Fund should be invested, on a prioritised basis, in infrastructure projects.

The National Development Finance Agency should pursue issues relating to EU accountancy practices which would facilitate the “off balance sheet” treatment of necessary infrastructure e.g. by way of operational lease structures.

In summary, Ireland’s inadequate infrastructure, across transport, water, waste management, energy and ICT, is already a deterrent to business expansion and to attracting foreign industry. It is imperative that Government increase investment in infrastructure development to ensure the NDP is implemented with urgency. At the same time, the National Spatial Strategy needs to be actioned and specific associated infrastructure projects identified and targets set for their implementation, to ensure industrial and social development and employment growth in regions outside Dublin.

4. MANAGE PUBLIC SPENDING:

We must promote an economic environment in Ireland in which enterprise can be competitive and thrive. Our economy is already “high cost”, which militates against our competitiveness internationally. Government spending is on the one hand one of the main drivers of inflation and cost imposition in the economy but on the other hand is also a key element in providing a potential key stimulus to research, innovation and enterprise.

If Ireland is to succeed in developing a competitive enterprise strategy, Government must manage public spending in a prudent and enlightened manner. No more than in the private sector, productivity, flexibility and quality of service in the public service must be continually improved without the imposition of unrealistic wage inflation.

In deciding on public spending, priority should be given to spending that stimulates competitiveness, enterprise, economic growth and employment. All Government spending, both current and capital, should be subject to a return on investment analysis which includes both return to society in terms of better service and social provision and impact on enterprise, economic growth and competitiveness. Public spending must be prioritised to ensure the overhead cost to the economy is kept within prudent limits and the stimulus to economic growth maximised. In particular, investment in education, research and development and infrastructure should receive priority.

Capital expenditure forms a major element of Government expenditure each year. IEI believes that greater effort needs to be exerted by all parties involved, in

achieving value for money in infrastructure projects. IEI's June 2003 submission to the Minister for the Environment & Local Government in Project Cost Estimation & Control made specific recommendations in this area (copy attached).

5. MANAGE PRODUCTIVITY AND REDUCE BUREAUCRACY IN THE ECONOMY:

Given the fact that Ireland is a high wage economy, we must ensure that productivity in both the public and private sectors is as high as possible and that bureaucracy is minimised.

It is best practice in the private sector to measure productivity, set benchmarks, monitor progress and seek continuing improvement. It is essential that similar processes are embedded into the Public Sector. In any future national agreements between the social partners, the issues of building in flexibility in work practice, willingness to change and adopt new technology and the need for ongoing increases in productivity, across both the public and private sectors, must be to the fore. The Institution welcomes Government's focus on e-business. However, there is a need to make significant further progress in this area in both public and private sectors if we are to realise the potential benefits of e-business such as savings in time and cost and the ease of doing business.

For enterprise and innovation to thrive in Ireland, the country must be an easy place in which to do business. There is no doubt that regulation in the public interest, health and safety, individuals rights, protection of the environment etc. are all issues which are important and must be effectively addressed. However, Government must ensure that bureaucracy is kept to a minimum and that enterprise does not become burdened with unnecessary regulations and form filling which are both time consuming and a source of additional overhead cost. In implementing appropriate internal regulation and in particular in implementing EU regulations, we must avoid putting self imposed anti competitive restraints on enterprise and innovation.

IEI has, in its September 2003 submission to Government on the proposed Critical Infrastructure Bill, commented on the need for improvement in the current planning and project approval system for critical infrastructure. The current timescales are far too long, the outcome unpredictable and the costs too high. Productivity in this area must be improved and bureaucracy reduced. The Institution has in its submission to Government proposed the establishment of a "one stop shop" project approval body and a specialist division of the High Court to deal with legal challenges to infrastructure projects to improve efficiency and certainty in the planning area. (A copy of the September 2003 submission to Government is attached)

6. SUPPORT START UP TECHNOLOGY COMPANIES:

With a highly qualified engineering and scientific workforce and appropriate support for Research and Development, innovation and patent development should flourish. The challenge then is to ensure that there is Government support and encouragement for technology companies to start up and grow.

Part of this support should take the form of innovative grants and tax credits. In addition there is scope for creative investment schemes along the lines of the current Business Enterprise Scheme, to ensure that money which might otherwise be invested outside Ireland is used as venture capital for start-up technology companies.

It is also important that there is a framework of support available for start-up companies in helping them grow in scale, get a foothold in Europe, market their products and services, expand their management, operating systems etc. The issue of mentoring and the development of competencies in management, finance, marketing etc. for small indigenous technology companies needs to be addressed in a more structured and forceful manner. Enterprise Ireland provides valuable services in this area. However, there is need to review how the role of Enterprise Ireland should be enhanced to ensure it provides the services and added value required for the companies of tomorrow, in a proactive and non-bureaucratic manner.

7. PROMOTE LIFELONG LEARNING IN ENGINEERING AND SCIENCE:

It is imperative that Irish engineers, scientists and technicians keep themselves up to date in relation to latest technical and scientific developments internationally. It is only by doing this that Ireland will create a knowledge-based economy which can realistically foster enterprise and innovation.

It is important therefore that Government put in place strategies and support mechanisms to further lifelong learning. This should include tax credits for individual engineers and scientists for expenditure incurred in undertaking continuing professional development (CPD) and for membership of professional bodies. Government should also provide ongoing support for professional bodies who actively promote CPD among their members and employees. In particular, IEI's CPD accreditation scheme for employers, currently supported by the Department of Enterprise, Trade & Employment, provides significant support and stimulus for lifelong learning by engineers. This scheme and similar schemes, which promote lifelong learning, should receive ongoing financial support by Government. IEI also believes that the role of FAS should be reviewed to ensure that its activities reflect the lifelong learning needs of a knowledge-based economy.