



Ireland's International Engagement in Science, Technology and Innovation

December 2008



Foreword

This report from the Advisory Science Council on Ireland's international engagement in science, technology and innovation (STI) is very welcome and provides very timely messages to all of the actors and stakeholders in our STI system.

Following ten years of sustained national investment in research and innovation, Ireland has built up a strong base of activity in both the public and private sectors that positions us well to engage in a meaningful way on the world stage as a credible partner in international STI networks.

As a small country, we must use these international networks in a strategic way to help us achieve our future targets as set out in the Strategy for Science, Technology and Innovation. The national strategy is an outward looking one that places particular emphasis on the visibility of our research system and international recognition of our capacity to innovate.

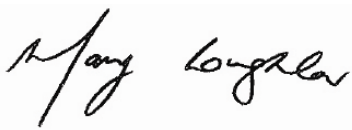
There are benefits for our national system from having a strong inward flow of trained personnel for research and innovation and from having Irish researchers and technologists in the public and private sectors spending time abroad to add to their stock of knowledge. The report identifies a wide range of other benefits for the public research system and for the private sector that come from being well connected internationally.

The report also provides the basis for being more strategic in the way that we pursue these international linkages. Significant amounts of Exchequer funding have been invested to bring us to the point we are at today. Going forward, there will be a strong imperative to show that this funding has increased our capacity to participate in international networks and to attract non-Exchequer resources into the country. This is essential if we are to have a sustainable funding model for STI in Ireland.

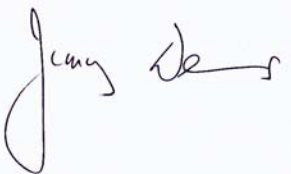
The report is also timely in terms of helping Ireland to respond strategically to developments at European level in relation to the European Research Area (ERA). A range of initiatives to encourage a coordinated approach to research in Europe are currently being launched as EU member states aim to strengthen further the ERA and use it to help achieve economic and societal objectives.

The report draws attention to the wide array of opportunities available in Europe and elsewhere and calls on all STI actors, including funding organisations, to think strategically about these opportunities and the changes they may need to make to have policies and programmes that are firmly embedded in the wider international system.

We wish to acknowledge the significant work that has been undertaken by the Advisory Science Council in producing this report. The report provides a good framework for taking a more strategic approach to international engagement and we support the call for all STI stakeholders in Ireland, including the private sector and the public funders of research and innovation, to translate these principles into action.



Mary Coughlan, T.D., Tánaiste and Minister for Enterprise, Trade and Employment



Dr. Jimmy Devins, T.D., Minister for Science, Technology and Innovation



Chairman's Statement

I am very pleased to present the Advisory Science Council's report on Ireland's international engagement in science, technology and innovation. This report has messages for all of the stakeholders that have a part to play in the strengthening of research and innovation in Ireland.

Our international linkages are important for all aspects of science, technology and innovation. However, there are particular reasons for the enterprise sector to be concerned with the strength of these linkages. It is essential that companies in both the manufacturing and services sectors have access to leading edge research, technology and innovation solutions wherever these may be located in the world.

The report draws attention to the many programmes and supports that are available to support international linkages and calls on all actors in the private sector and in the public sector to use these programmes and supports in a strategic manner.

There are strong resonances between this report and our recently published report on researcher careers (October 2008). The importance of maintaining outward linkages is an essential part of career development for researchers and the recommendations in this report will help to underpin the Framework for Researcher Careers that we have proposed.

A set of guidelines has been developed to support a strategic approach to international linkages. It is important that decisions are taken on a timely basis and the framework we put forward aims to strike the appropriate balance between rigorous analysis and timely decision-making.

I would like to thank the taskforce that produced this report and oversaw the detailed studies that provide the basis for the Council's recommendations. The taskforce was chaired by Ian Cahill who has given generously of his time to this work and to the Council. I would also like to thank the many researchers, research centre managers, enterprise R&D managers, programme managers and the many other stakeholders who participated in the surveys and workshops underpinning this study.

I would like to acknowledge the work undertaken by Genesis Strategic Management Consultants and the Manchester Institute of Innovation Research at the University of Manchester who were involved in all aspects of the study including the background studies and the development and testing of the framework that is set out in this report. I would also like to acknowledge the research support provided by Forfás. This report represents the output of a very strong partnership. I believe that the recommendations and guidelines produced through this partnership will have a significant impact on Ireland's approach to, and recognition of, its international STI linkages in the years ahead.



Mary Cryan, Chairman, Advisory Council for Science, Technology and Innovation



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Executive Summary

The Strategy for Science, Technology and Innovation (SSTI) provides the blueprint for Ireland's continued transition towards a knowledge-based and innovation-driven economy. The Advisory Council for Science, Technology and Innovation continues to actively support the Government's commitment to ongoing investment in the public research system and incentives to the private sector towards the continued growth of its research and innovation capacity.

This report addresses a particularly important set of challenges identified in the SSTI: the need to ensure that Ireland's research community remains actively engaged in international networks and that Ireland adopts a strategic approach to the wide range of international research programmes, organisations and other opportunities that are of potential benefit to the research community in the public and private sectors in Ireland.

Benefits of International Engagement and the Need for a Strategic Approach

Science, technology and innovation have always had a strong international dimension. It makes no sense for any country, large or small, to pursue a purely national approach in this area. International collaboration allows countries to share the costs and risks of tackling common research challenges in areas such as climate change, healthcare, energy, security and food supply. Researchers and enterprises need to identify and work with partners throughout the world, based on criteria of excellence and track record, and should not be constrained to partnerships within national boundaries alone. A country cannot claim to have a "world class" research system unless that system is firmly embedded within the global system.

International collaboration enables the sharing of specialist facilities and infrastructures that would not be feasible (or desirable) to have in place in every country. It also helps to maintain a strong inward and outward flow of researchers including short-term visits and periods of longer duration. International mobility is important at all stages of the researcher's career. For the enterprise sector, access to technology networks and insights into next generation technologies are among the main drivers for international collaboration.

A more strategic approach to international engagement will contribute to the achievement of Ireland's SSTI targets. It will assist in building and strengthening the links between enterprise and academia nationally and internationally and in transferring knowledge to the marketplace. It will help to ensure that national and international STI programmes work together in a complementary fashion and that increases in national funding do not have the perverse effect of making researchers and enterprises look inward and turn away from international partnerships and other opportunities. It will help to ensure that capital investment decisions are made within a wider context taking into account developments elsewhere in Europe and globally in terms of the provision of specialist infrastructure and facilities.

A more strategic approach will also help to ensure that Ireland plays an active part in contributing to the development of the European Research Area rather than simply reacting to the initiatives of others. It will provide a basis for making decisions from the wide array of opportunities that are presented to the country as a whole and to individual research teams, institutions and enterprises. In overall terms, it will contribute to the high level objectives set out in the SSTI around the creation of a world-class research system and the recognition of Ireland as a country of science and innovation.

Approaches to STI Internationalisation in Other Countries

Approaches to international STI engagement in Austria, Finland, Germany, Switzerland, the Netherlands and the United Kingdom were examined as part of the study. All of the countries studied are trying to develop more formal approaches to international STI engagement. Some countries have produced international STI strategies and/or are addressing international STI engagement as part of a wider globalisation strategy.

Whether a strategy document exists or not, it is clear that countries cannot achieve a truly strategic approach to international engagement unless the international dimension receives prominence in the internal governance structures for STI decision making. Different models for addressing the international dimension of STI were found, ranging from those with a single dominant actor steering co-ordination (e.g. the Federal Ministry of Education and Research (BMBF) in the case of Germany) to those with a more open and discursive approach (e.g. the Global Science and Innovation Forum in the UK which comprises both governmental and non-governmental actors).

The key issue for most countries is finding the right balance between top-down decision making regarding international STI engagement and the bottom-up initiatives of researchers, research institutions, enterprises, sectoral groups and other STI actors. In most countries, governments seek to play a facilitatory role to encourage appropriate participation in international programmes and to respond to the needs of different research communities. At the same time, decisions need to be made and most countries are able to point to criteria, rules and other approaches that aid decision-making, operating at both the level of government ministries or at lower levels. Switzerland and Austria tend to use formal techniques (e.g. cost-benefit analysis and other quantitative methodologies) to help make decisions regarding membership of international organisations, STI agreements with other countries and other international partnerships.

Ireland's Portfolio of International STI Agreements at Government Level

To inform its recommendations on this subject, the Council organised the first major audit of the international STI agreements and partnerships that are sponsored by Irish Government Departments and their agencies. In total, 142 international agreements, partnerships and other activities of benefit to researchers and/or enterprises were documented in the audit.

