Principles to Inform Preparation of the Strategy for Science Technology and Innovation, 2015–2020

RIA

Developing and maintaining a fully integrated research-and-innovation system that addresses short-term needs while also providing for longer-term possibilities fuelled through fundamental research is now recognised as an essential part of a small, advanced country's infrastructure for international competitiveness. Research and higher education are recognised differentiators for Ireland in the global competition for foreign direct investment and in advancing its indigenous industry.

The Royal Irish Academy/Acadamh Ríoga na hÉireann, Ireland's national academy for the sciences, humanities and social sciences, welcomes the opportunity offered in the development of the Strategy for Science, Technology and Innovation, 2015–2020 (SSTI2) for robust discussion on how best to support the achievement of such ambitions.[1] Building a strong, excellent, sustainable research-and-innovation system is a demanding but vital goal for Ireland. The current process offers the opportunity to develop an ambitious vision for Ireland's science system, one which is shared and owned by researchers, industry, civic society and government.

In this short submission, we focus on stating key principles rather than attempting an exhaustive analysis of past and current progress. The Academy acknowledges the dramatic advancement of research capacity and achievement in Ireland since the late 1990s and throughout the period of the first Strategy for Science, Technology and Innovation, 2006–2013. The Academy also recognises the funding difficulties associated with national austerity and welcomes the continued commitment of the government in substantially maintaining public funds for research and science. The roll-out of the National Research Prioritisation Exercise emerged as a key science-policy instrument during this time, but regrettably the implementation of its 'research for knowledge' and 'research for policy' strands was unsatisfactory. SSTI2 offers an opportunity to redress the balance of support for the various continuums of the research system. Support for excellent research within a wide range of disciplines and across multidisciplinary (science, technology, engineering, mathematics (STEM) plus the humanities and social sciences (HSS)) teams will pay rich dividends in terms of building diversity within the research ecosystem and in opening up new breakthrough areas of research and application. This in turn will position Ireland as a world leader in research pertinent to major global challenges, thereby underpinning the continued economic, social and cultural development of the state.

The Academy suggests that the following principles should underpin a national strategy for research and innovation:

Support excellent research and diversity of research

A strong, vibrant, sustainable research, education-and innovation-system requires different types of research across many different fields, with different aims and objectives, from close-to-market to blue skies. The national strategy should reaffirm Ireland's commitment to these principles—as stated in previous strategies—and recognise their role in the achievement of this vision.

Recognise the strategic importance of investment in fundamental research

The strategy should recognise the value of, and clearly support, discipline-specific and multidisciplinary scientific research and scholarship spanning the continuum from fundamental to applied research. This continuum variously supports Ireland's international reputation, the teaching mission of higher education, the quality of our graduates, the training and education of researchers, the economic and innovative capacity of Ireland, and our capacity to tackle contemporary and future social, economic and cultural challenges.

Acknowledge the imperative for prioritisation to tackle grand challenges

There is an emerging cohort of common grand challenges that countries in general face, in addition to the job-creation and sustainable-economic-development imperatives. It is reasonable to recognise a continued role for a degree of strategic prioritisation to support shorter-term objectives, but to do so within an overall system that also protects the longer-term pipeline of excellent young researchers across a broad range of disciplines.

Prioritise leading-edge research in research-intensive universities

Follow international evidence that shows that leading-edge research is best conducted within a research-intensive, autonomous, higher education environment where positive interdisciplinary synergies between scientific discoveries, education and human-capital development, enterprise and wider civic engagement can be fully exploited.

Recognise that excellent research needs excellent people and infrastructures

The investment needed to achieve Ireland's continued success begins long before a patent is lodged, a licence is granted or a journal article is submitted. Excellent research requires investment in the nurturing of talent and the provision of high-quality education and skills training from primary to fourth-level education. Continuing support for Ireland's brightest and best researchers should be a cornerstone of Irish research-and-innovation strategy.

A strong and coherent strategy underpinned by the above principles should include the following strategic goals:

To make Ireland a world leader in interdisciplinary research across STEM+HSS

Acknowledge that most research challenges require a broad multidisciplinary approach, with research insights needed from STEM and HSS to maximise the positive economic, societal and cultural impacts of such research.

To rebuild core-research funding

• Deliver imaginative solutions to rebuild higher education funding, recognising the role of the higher education sector as the major research performer within the national research ecosystem, given the major cumulative and continuing cuts in core funding over the past seven years;

- Drawing inspiration from the hugely prestigious European Research Council research-award schemes, Ireland should quantify a minimum proportion of resources to be set aside for basic research across all public-research funders.

The integration of the research-and-innovation ecosystem

The synergistic interaction between research and innovation and education is likely to be one of the strongest drivers of future success. This requires that each relevant government department's strategic needs are understood and met within an overall balanced strategy for research, education and innovation.

To communicate the success and value of research across the disciplines

Build continuing public support, understanding and appreciation of the benefits and value of research and scholarship as a means of social, economic and cultural self-knowledge and transformation. HSS disciplines are important in creating a national environment where research and innovation are understood, appreciated, and (where necessary) critiqued.

Establishment of a culture of independent review

Implement best practice and establish regular, robust and transparent reviews of Ireland's science-policy instruments and programmes by a competent body independent of funding agencies, which necessarily goes beyond ad hoc consultants' reports.

The strategic process

The process through which the strategy is developed offers an opportunity to achieve a clear and shared understanding among all those with an interest in the research, education-and-innovation system with regard to:

- The vision driving the national strategy for research and innovation;
- The baseline analysis informing this vision;
- Inclusive definitions and understandings of key concepts—e.g. impact, innovation;
- What is working well and whether and how it can be further improved;
- What has not worked well or has been omitted, and how this might be rectified;
- Recognising and understanding the changes needed to achieve the agreed vision;
- The supporting programmes and supports necessary to achieve excellence, including, for example, infrastructures, international linkages, industry partnerships, researchers careers, etc.;
- The role of the various agencies within the system, recognising the centrality of research performers to the achievement of the vision.

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