



Royal Irish Academy

Report on Dialogue on Research Funding in Ireland

18 October 2012

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RIA Overview of the Dialogue Forum

The Forum highlighted the importance of continued dialogue in building a shared understanding and appreciation of the challenges and objectives held by the stakeholders engaged in delivering, designing and implementing the various elements of the national research system. Such dialogue offers an opportunity to create a constructive environment in which stakeholders may constructively share learning and knowledge to inform national R&D policy development and implementation.

Arising from the Forum a number of issues were continuously identified as requiring further consideration and attention by the various stakeholder groups. These include:

- What is the appropriate balance between funding for basic research and funding for innovation and applied research?
- The need to develop a shared definition and understanding of 'impact' and 'relevance' as it is applied to publicly funded research, including the full spectrum of economic, social and cultural value of public research
- The importance of a shared understanding of appropriate measures to assess impact and relevance across the sciences, humanities and social sciences, with a particular emphasis on measures to assess human capital related impacts
- The impact of current policies upon researcher's careers
- The need to recognise the value of outputs arising from R&D includes intellectual human capital and reputational outputs.
- The imbalance of issues of sustainability, value, and coordination across the research ecosystem;
- Recognising the need for ongoing discussion and sustained dialogue amongst the research community and those charged with developing and implementing national R&D policy;
- The overall need for a clear National Research Strategy that is more holistic than the NRPE (National Research Prioritisation Exercise).

Main issues articulated

- The research ecosystem has been positively transformed over the past decade.
- Today's challenge is to deliver on expectations with regard to the economic and social benefits of research, while nurturing the fundamental research base.

- The need for balance between long term and current requirements and between curiosity-driven and applied research, was continuously emphasised.
- Concern not to lose out on innovation through overly narrow or prescriptive allocation of support to where, how and by whom curiosity-driven research is to be funded. One suggested option would be to look at the potential to fund curiosity-driven research through thematic or programmatic approaches which fit with prioritisation.
- Does the research ecosystem need an overall research strategy or framework?
- The human capital emerging from Ireland's publicly funded research is a hugely significant research output.
- The value to national reputation and competitiveness of the research base and associated human capital and intellectual output.
- There should be supports in place to actively support Ireland's capacity to leverage international funding, e.g. Marie Curie, ERC, FP7 (the enhanced supports put in place for FP7 were favourably commented upon) through each institution identifying and mentoring potential candidates.
- Significant concern regarding the stifling of future opportunities for early career researchers. Related issues cited included the PhD process, the responsibilities of funders and higher education institutions vis-à-vis career structures, and expectations of researchers.
- Each agency needs to adopt strategic goals and to devise appropriate impact measurements, the latter should be informed through dialogue with the academic and research community.

RAPPORTEUR'S REPORT

1. Context and report format

This Dialogue Forum was convened by the Royal Irish Academy (RIA) in response to concern in the academic community about shifts, real and perceived, in the design and delivery of national research funding and policy. The Forum was conceived by the RIA as an opportunity for a genuine exchange of views, conducted in the spirit of the Chatham House rule, among all significant national stakeholders in research including researchers, funders, government and enterprise. Participants were encouraged to express their views freely, but with respect for the views of others.

The Forum was chaired by Professor Philip Nolan, President, NUI Maynooth. The dialogue was mediated via four panels operating sequentially. The panels dealt respectively with the perspectives of Researchers, Higher Education, Industry and Society and Agencies. (The Forum Programme is outlined in Appendix 1). This report provides a detailed overview of the content of inputs provided by the panellists as well as contributions from the floor, the latter is considered particularly significant in light of the Academy's expressed commitment to enable and channel the voice of the academic community to inform government policy in respect of higher education teaching and learning, and research.

1.a. Opening remarks, RIA President and Chair

In his opening remarks, the RIA President, Professor Luke Drury, noted that the facilitation of meetings such as this was an important role fulfilled by the Academy, which is distinctive in being the only independent, objective and arms-length body that unites the humanities, social and natural sciences, engineering and medicine on the island of Ireland. The President noted that as research generates several different public goods there are inevitably, differing views and emphases on the desired and desirable role and shape of the national research system, which are further extenuated by the challenging economic climate in Ireland at present.

The Chairman of the Dialogue, Professor Nolan, in his opening remarks noted that the objective of the Forum was to stimulate effective and constructive dialogue on public

research in the arts, humanities, social sciences, science and technology, how it should be funded, governed and delivered, and its value to the country and society. He noted that 'value' should encompass a sense of economic, reputational, social and cultural value. He acknowledged the significant investment in research over the decade from 1998 to 2008, and the need now, in a time of crisis, to focus on consolidation, sustainability, value, diversification of supports, and the European Union and international context.

2. Opening Address - Minister for Research and Innovation, Sean Sherlock T.D.

The Minister noted the substantial progress over the last decade in research capacity, excellence of Irish research and the underpinning of the impact of that research on enterprise development. Particular reference was made to the increase in publicly funded research and the substantial leveraging of business R&D investment which this gives rise to. There has been a cultural change with IDA Ireland targeting science, technology and innovation (STI) investments to qualitatively transform and deepen the roots of key multinationals here, and Enterprise Ireland (EI) supporting the growth of STI among smaller indigenous firms. He noted that the indicators of exports, employment and sustainability of R&D performing firms consistently outperform those of firms not engaged in R&D. While the benefits resulting from strategic investment in STI are clear, the fiscal and economic challenges facing the State are of a scale and immediacy such that the case for sustaining investment in STI needs to be compelling and evidence-based. The Minister noted that such beliefs drove the Research Prioritisation process and adoption of its recommendations vis-à-vis the identification of 14 strategic research areas of greatest opportunity and the alignment of research investment in these areas and also in research for knowledge and policy. He noted that Ireland is not in a position to make available the full Government Budget Appropriations or Outlays on R&D (GBAORD).¹ The GBAORD figure for Ireland was €823m in 2011, of which around €440m was made available to support competitive funding and infrastructure.

Minister Sherlock further outlined the work of the Prioritisation Action Group (PAG), which he chairs and which represents funders and Government Departments: he noted that the aim of this group is to connect, coordinate and validate the implementation of the Research Prioritisation policy across the research ecosystem. Specifically, PAG supervises the production of an Action Plan for each of the 14 prioritised areas. He noted that Forfás will oversee a stakeholder engagement process during November 2012, to validate the PAG's work to date, and that the RIA Dialogue could itself be a timely submission to that. Related initiatives to support delivery of research prioritisation include:

¹ The aggregate funds which might apply to research prioritisation - internationally comparable figure for investment in R&D.

- Development of Intellectual Property (IP) Protocol
- Encouragement of commercialisation
- Consultative engagement with stakeholders
- Supporting and enhancing relationship with industry
- Designation of a Central Technology Transfer Office within EI
- A framework for measuring outcomes of research prioritisation to assess relevance and impact.

Minister Sherlock noted that the current day remit of Science Foundation Ireland (SFI) is to focus on supporting strategic areas of relevance. However, he further noted that the criteria of impact and relevance are not intended to imply abandonment of support for fundamental research. Broad commitments remain, and basic research will continue to be part of public supports consistent with the Higher Education Strategy, which envisages research as informing teaching and is focused on growing critical mass and clusters. Detailed guidance on the Higher Education Strategy will emerge early next year, having regard to the on-going HEA dialogue with Higher Education Institutions.

3. Researchers Panel

Topic: What are the strengths and weaknesses in the current system?

The key issues emerging from this discussion included:

- The need to acknowledge involvement of players other than HEIs in the research space;
- A perceived need to join up a research ecosystem that has become disparate;
- An absence of satisfactory career paths for researchers;
- The need to balance current and future research concerns, and investment in curiosity-driven and applied research.

The Panel: Professor Nicholas Canny, NUIG; Professor Orla Feely, UCD; Professor Paul Ross, Teagasc; Professor Ken Wolfe, TCD

The panellists' contributions and the wider discussion on this topic identified significant strengths and challenges across the current system.

Professor Nicholas Canny, initiating this topic, posited his views as follows:

Strengths

- There has been a transformation of the national funding environment for R&D over the last decade due to investment directed through the Programme for Research in Third-Level Institutions, the Research Councils and SFI.
- All sectors have benefitted via appropriate and predictable funding for PhD students and post docs, infrastructural transformation, library and equipment resources, laboratories and study places, and support services.
- In making academic appointments and in deciding on career advancement significant weight is now given to research achievement. There is now better quality research-active undergraduate teaching in place.

Challenges

- Researchers remain in a state of uncertainty with regard to their careers. Ireland lacks positions to absorb them and promotional paths for those who are appointed
- Infrastructure sustainability is a significant issue, aggravated by duplication of expensive research facilities which are not full to capacity. Some rationalisation is necessary.

- There is an unfounded belief at policy level that one can distinguish between research and innovation and that it is possible to target funding towards research areas where jobs are more likely to result from the investment. Innovation does not come about only through applied research. Innovation is most likely to occur at the frontiers of research where excellence and originality are the sole criteria for funding. For that reason money for curiosity-driven research should not be constrained. Ireland needs a designated budget for frontier research. This is absolutely necessary if researchers are to prepare themselves to be competitive for ERC (European Research Council) funding.

Professor Orla Feely, in her presentation, commented positively on the transformation of the national research funding environment, noting that investment in research motivated by the twin streams of enterprise and education is delivering impact within Irish education, society and the economy. She further recognised the professionalization of the research environment and the enrichment of teaching that flows from research. National investment in this area has produced a highly skilled research cohort vital to economic development, delivering impact on the international stage.

However, it is now a time of uncertainty as the evolving parameters of and changes to the research ecosystem are unclear, and this gives rise to some fears for the future. As yet, there is some uncertainty regarding the shifting role of agencies and the distribution of funding.

The unbalanced distribution of support in the system needs to be addressed, e.g. with regard to engineering. It is right that particular research areas should be prioritised, but it is also necessary to bear in mind the health of the overall research/education/enterprise ecosystem, which has many complex interdependencies. It is necessary to arrive at balance between both long term and current needs and between fundamental and applied research. There is also a need to examine career structures and employment opportunities for researchers.

Professor Paul Ross, in his contribution on this topic, identified the following as *strengths* in our research ecosystem:

- Human capital – Ireland has excellent researchers;

- Critical mass for R&D investment, where the individual Principal Investigator is funded and can grow his/ her team appropriately;
- Multiple funding sources from Departments, agencies and industry, promoting multidisciplinary research, i.e. research on sectoral interfaces;
- The importance of SFI C-SETS for technology transfer and as agents of change;
- The existence of supports for both basic and applied research.

By contrast, he identified the following as *weaknesses*:

- There should be more emphasis on addressing national strategic challenges and on entrepreneurship within HEI (higher education institutions) and PRO (public research organisations) systems;
- There is a need to address the absorptive capacity of industry for the STI strand; how do we get more high level postgraduates into industry?
- Lack of opportunities for young researchers – difficulty of getting on a career ladder;
- For the future an overemphasis on applied research may damage basic research capability;
- There is a need to reward entrepreneurship more.

Professor Ken Wolfe focused, in his contribution, on the importance of the national / international research loop, pointing out that researchers are internationally mobile and knowledge is the product of research. International reputation is very important for sustaining the virtuous loop of excellence/sustained funding, hence the importance of sustaining the reputational impact of the country, of institutions, and of individuals. There is a significant challenge posed so that national research prioritisation does not damage this international loop. Stringent quality control is currently provided by the International peer community and there is danger that national systems are inferior and damaging. It will be necessary to encourage and support excellent researchers into spin-offs to commercialise their knowledge discoveries.

From the floor

The issues raised by panel contributions were augmented by contributions from the floor on a number of additional and complementary concerns:

- The need for HEIs to grow and sustain linkages with small and medium enterprises
- The challenge of a career in research given the absence of a career structure
- Researchers are mobile and are more likely to move in absence of supports and clarity about supports and careers
- The need for critical mass in higher education institutions and public research organisations in order to sustain research excellence
- Need for coherent approach to recognise generic skill sets / experience of younger researchers
- Need to remove barriers so younger researchers get funding in their own right

4. Higher Education Panel:

Topic: Why should higher education institutions do research?

The key issues raised in this panel discussion and through exchanges from the floor can be summarised as:

- Where, how and by whom curiosity-driven research is to be funded?
- A concern not to lose out on realising innovation potential and capacity through overly narrow or prescriptive allocation of supports
- The need to address employment preparation, career structures and expectations of researchers.

The Panel: Mary Doyle, Department of Education and Skills; Professor Ellen Hazelkorn, DIT; Professor Patrick Prendergast, TCD.

Mary Doyle, in her contribution, offered the following points for consideration:

- A huge national investment in R&D goes into HEIs. It is important to consider the higher education system as a whole, with research, teaching and engagement all intertwined.
- The importance of human capital output from higher education and research
- The public good nature of research – recognised by emphasis in prioritisation report on research for knowledge and research for policy supporting the prioritised areas.
- The impact of research activities on the quality and relevance of teaching at undergraduate and postgraduate level
- The debate on research must also be seen in the context of broader reforms being implemented in higher education system driving towards critical mass and clustering
- Players in the research ecosystem need to work together in a complementary and coordinated way

Professor Ellen Hazelkorn, in her contribution, noted that the present economic crisis in Ireland makes it imperative that we reflect on the contribution of higher education to society and the economy. The human capital output of HEIs leads to the productive capacity of society and the demand for skills continues to rise. She observed that research continually shows that the only viable growth strategy is through innovation, in which higher education

plays a major role through the quality and quantity of graduates and through research, accompanied by greater equality of access.

She expressed a concern that research prioritisation is narrowly framed in policy goals, noting that technology is not itself a magic bullet. Much innovation is social in nature. Her desire is for a balanced HEI framework, which would recognise the role of AHSS (Arts, Humanities, and Social Sciences), deliver better PhD supports, career opportunity and greater equity.

In his contribution, **Professor Patrick Prendergast** set out his view that HE research is part of the core purpose of a university, where the output is citizens and contributing members of society, not just workers. Graduates go on to become innovators in society. Research is a key responsibility of every academic staff member and impacts on the quality and relevance of teaching at undergraduate and postgraduate level. He commented that there is a risk that the focus on immediate outputs could be at longer term expense and expressed a similar concern to that of Professor Hazelkorn for a balanced innovation ecosystem which would provide appropriate supports and recognise the contributions of many aspects of society.

In opening the wider debate on this topic **Professor Nolan** noted the two great themes at issue, the impact of education and its relationship to the massive international research ecosystem; and the core issue of what we mean by innovation.

From the floor

The following perspectives emerged in the ensuing exchange of views:

- Prioritisation could send negative messages internationally. For success in research there is a need for an international connection. Reductions in funding impacts on international participation and the ability to leverage international funding.
- There is a need for clarity on supports for curiosity-driven research – e.g. in maths and engineering. A key concern is via which channel are people going to receive funding whose research areas are outside the prioritised areas? Or are they going to receive funding?
- Students are often highly motivated by curiosity-driven research, and need

engagement in breadth and diversity of disciplines to expand their capacity and expertise. Moreover, at initiation of research it is not always clear what the outputs will be.

- There is a need to inculcate realisation for young researchers that for vast majority, perhaps 80%, their careers will lie outside academia. Colleges now have deans of graduate studies, and complex transferable skills are imparted through the process of doing PhDs. It is also vital that HEIs and agencies get interaction with future employers to pursue creative ways of incentivising researchers to make the move to the enterprise sector.
- Employment policy and training will be developed further under the HE strategy
- The value of human capital produced in the Irish research ecosystem is more important than the actual research outputs.

5. Industry and Society Panel:

Topic: Why does industry and society need publicly funded research?

The Panel: Brian Donovan, Eneclann; Professor John FitzGerald, ESRI; Dr. Colin Lyden, Analog Devices; Dr. Ena Prosser, Fountain Healthcare Partners

Brian Donovan addressed the issue of why humanities academia and industry should be mutually interested in each others goals and delivery of same. He argued that industry is clear on its agenda, what it wants from humanities: position, product, profit and the publicity of association with a public institution. By contrast, humanities academia is often in an unnecessarily weaker position as it is unclear about what it wants from industry. If the focus of humanities is simply one of industry giving money, then they will be disappointed. Humanities academia needs to work out how to make industry interested. The profit motive is obvious but there can also be huge potential for enabling research which can either respond to industry's needs in a task oriented way or product development way.

Professor John FitzGerald proposed three overarching reasons for public funding of research as follows:

- Research to enhance the productive potential of the economy through aiding business. There should be some obvious public good over and above the private good of the firms that benefit e.g. research in electricity transmission – the effects of privatisation on the Central Electricity Generating Board (CEGB). Irish public funding should concentrate on areas where we have a comparative advantage and areas where the research will not be undertaken elsewhere.
- Curiosity-driven research not directed to an obvious end. Irish funding should concentrate on areas where we have a comparative advantage. Academic excellence is a good metric.
- Research for better informed policy making. This is crucial for a successful society and economy and should not be mixed with research of use to business.

These three objectives ideally require three distinct funding channels, each with clear objectives. Achieving balance between the objectives is a political decision and building a research team takes time and focus.

Dr Colin Lyden instanced his experience as a researcher in industry in Ireland with Analog Devices. The focus is on developing new products in integrated circuit (IC) design, which requires a continuous focus on new technology to do this competitively. In his view, the answers to the questions *“what do we want from publicly funded research”*, and *“what do we want from publicly funded research in Ireland”* are very different. He proposed that the second question is far more important.

What we want and often get from publicly funded research across the world are new ideas on new applications of what we are good at, and new ideas on better ways to do what we are good at. Sometimes we get the people as well. By contrast, what we want from publicly funded research in Ireland is a supply of very good people, to broaden and deepen sectoral areas in Ireland. Getting good ideas would be great, but where the people are good enough, the ideas come. Unfortunately, very few people have moved from Irish publicly funded research into IC design in the last decade. This is consistent with a view that public research funding strategy in Ireland has ignored the reality of business R&D in Ireland.

Dr. Ena Prosser referenced her current role as an entrepreneur working in Medtech and Life Sciences industries. She noted the following:

- Entrepreneurs do not care if knowledge comes from a university in Ireland or elsewhere so long as it is the best available and is “commercial”.
- The Kerry Group’s sizeable, key investment in Ireland with a standalone R&D capacity is good for everyone in the innovation space.
- The "Multiplier effect" of companies on local jobs is well known. What is the corresponding "multiplier effect" of universities?
- Everyone thinks their own competence is the most important aspect of the innovation process. The best inventor team is rarely the required development team and technologies pass through several hands to create value before becoming products. All parties are valuable on this food chain- including operatives and the developers in industry.
- The life science sector is of enormous importance to Ireland to both indigenous and

FDI (foreign direct investment) firms but is not quick to change or to absorb new ideas

- Internationally, "stop/start initiatives" in research policy and investment are very confusing to industry and ways to interact with researchers appear to change frequently for unclear reasons
- People are at the centre of the 'dividend' for Ireland's reputation internationally and mid-long term commercial dividend - the retention of key people - is important as well as recruiting new blood to the system
- Ten years on, there is a fundamentally improved research environment in Ireland and the speed of growth needs to be matched with better management of a sustainable infrastructure. We need to manage what we have and use the space, people and equipment we have optimally.
- We do not have a public research system that is easy to understand. If you are small you cannot easily navigate it.
- We should be very careful in language used in any public document articulating public policy. Think of international messaging so that we do not deter viable investments in Ireland, even if these fall outside the fourteen areas of priority.

From the floor

Opening this panel discussion to the floor Professor Nolan asked for an expansion on the question "are there enough good people coming out of the HEI system"? Additional viewpoints articulated in the ensuing discussion were to the effect that:

- The fundamental issue is not quality in general, but getting good people in the areas that are required by industry.
- There is an issue with the paucity of people moving from Irish publicly funded research into industry.
- Students gravitate to what are seen as "hot" areas of study which may or may not correspond to real need. Funding sends signals to this regard and it is very damaging if these signals are wrong.
- Operative-level jobs are also important, economically and process-wise and there is a need for appropriate skills at that level.

- The thirteen applied technology centres across the IoT network have very good local linkages to SMEs.
- Research outputs are a mix of public and private goods. Policy-makers as well as academia and industry are consumers of research outputs.
- There has been significant growth in PhD outputs but there is scepticism about whether volume mitigates against quality. Similarly some scepticism was expressed about the adequacy of undergraduate teaching.
- PhD courses should, and to some extent do, offer the opportunity to produce broad skills in potential employees.

6. Agencies Panel:

Topic: *Is the current research system funding fit for purpose?*

The panel: Enda Connolly, HRB (Health Research Board); Professor Mark Ferguson, SFI; Dr. Eucharía Meehan, IRC (Irish Research Council); Gearoid Mooney, EI (Enterprise Ireland).

HRB (Enda Connolly)

Consistent with its mission of improving people's health, patient care and health service delivery the HRB plays a key role in health system innovation and economic development through:

- Driving the development of excellent clinical research within a coherent health research system
- Building the capacity to conduct high-quality population health sciences and health services research
- Working with key partners to develop and manage high-quality national health information systems
- Generating evidence and promoting the application of knowledge to support decision making by policy-makers and practitioners

HRB funded research has multiple goals and takes place across the continuum of curiosity-driven, policy and applied research

SFI (Professor Mark Ferguson)

SFI's new strategy, Agenda 2020, will shape the nature and direction of its science funding to the research and business community. It is an ambitious strategic plan, with specific actions and key performance indicators to measure progress. It has four primary objectives for SFI:

- To be the best science funding agency in the world at creating impact from excellent research and demonstrating clear value for money invested
- To be the exemplar in building partnerships that fund excellent science and drive it out into the market
- To have the most engaged and scientifically informed public and

- To represent the ideal modern public service organisation, staffed in a lean and flexible manner, with efficient and effective management.

On the issue of whether the current research funding system is fit for purpose, Professor Ferguson expressed the view that the last twelve years for science in Ireland had been a journey from poor to good but now we are on a journey from good to excellent and that required some different instruments, e.g. strategic alignment and focus, in addition to developing human capital, research capacity and infrastructure. The need for strategic alignment was exemplified by the current mismatch between job vacancies in the IT industry in Ireland and the availability of trained personnel. He noted that SFI's remit was being changed to include a specific reference to applied research.

Professor Ferguson highlighted that SFI had consulted and communicated widely with the community both about Agenda 2020 and the application of research prioritisation criteria to its various funding schemes and the final documents, incorporating feedback from the consultation, were published on SFI's website. NRPE criteria are being applied intelligently and appropriately in different ways across SFI's various funding schemes, e.g. there was increased support for excellent young emerging researchers through The President of Ireland Young Researcher Award (PIYRA), Starting Investigator Research Grant (SIRG) and the new European Research Council schemes. Funding through the Investigator Award (IvP) would alternate every year, between open and thematic calls. Centres had a hub and spoke design with an annual call for new spokes but a spoke proposal would be reviewed at any time if it had at least 50% of the funding in cash from industry. The 'grow your own' strategy of increased support for promising young researchers was complemented with a 'recruit your own' strategy for strategically important areas and iconic leaders, as without excellent leaders some important areas may struggle to win competitive funding. Prof. Ferguson stated that SFI was striving for a more balanced portfolio, strategically aligned with national needs and priorities but within that supporting the whole spectrum of research.

International peer review, of all proposals (including maths), will still be an essential part of assessment for support in order to sustain excellent quality. The calibre of the impact statement is a critical part of the application for funding and should address the issue of why taxpayers' money should be used to fund such a proposal. Professor Ferguson noted that SFI

places a lot of emphasis on using funding strategically to leverage additional funding, e.g. its partnership with Wellcome, or its approach for ERC funding and referenced in this regard that researchers were not applying in significant numbers to Wellcome or ERC. His intention is to pursue a more joined up approach across the research ecosystem through a much greater emphasis on thematic programmes. He also anticipated the consolidation of small research centres and the introduction of equipment access charges to address the issue of sustainability.

Irish Research Council (Dr. Eucharía Meehan)

The mission of the Irish Research Council (the Research Council) is to enable and sustain a vibrant and creative research community in Ireland. The Council will support excellent, innovative and exploratory research across all disciplines, and is people focused - specifically on their education, skills and careers, and works across the research ecosystem. She noted that one of the consistent themes of the day was the importance of people and education.

The key points that the Irish Research Council wished to make at this time are:

- There is a real risk that the research funding system could lose sight of the paramount importance of research excellence - that all excellent, good quality research has benefit, regardless of whether it generates fundamental knowledge, or whether it is use- inspired or applied. In the case of fundamental knowledge the benefit may not be clear beyond impact on the knowledge pool, on education or on human capital but this does not make it any the less valuable. We should fully appreciate and value impacts both short and long term whether educational, cultural, societal or economic. This must be done in a well understood and transparent way.
- Very significant changes have taken place in the research funding system in the past 6 months – new Council, a number of agencies changing focus and strategy in response to government policies. There has been a very big emphasis on eliminating duplication. What we now need to be more concerned about are gaps which have or could potentially emerge in the system and which could be damaging with respect to the now and to ensuring the system is ‘future-proofed’. Gaps include disciplines and areas that may not be covered, and a lack of balance between research which is seen

to have short term versus longer term benefits.

- The Council is of the view that a vacuum exists with respect to the overarching picture of what the system is endeavouring to deliver – to avoid gaps a full picture must be painted so that there is coherence in the system and risks can be managed. Now is the time to step back and paint that picture.

Dr. Meehan noted that there is very little emphasis in the discourse on research for cultural or societal impact and, in response to queries that had been raised earlier re agency roles, clarified that Irish Research Council is not designated as the research agency either for curiosity-driven research or for policy research.

Finally she noted that as the Council uniquely covers all disciplines and all ‘types of research’ – excellence being the determinant of funding – and as the Council has now a policy advisory role, it is willing if requested by the Minister to act as a convenor/moderator of a process and to engage so as to address issues identified.

Enterprise Ireland (Gearoid Mooney)

Mr. Mooney advised the Dialogue that EI’s interest in research is completely driven by economic imperative. Its focus is the commercialisation of research outputs.

EI leverages the system built up by SFI, HEA, etc. to deliver spinout companies and transfer technologies to companies. EI also facilitates companies’ interaction with the researchers primarily by funding researchers to undertake projects on industry’s behalf

He noted the SFI impact which was starting to come through in the EI client space and outlined for the Dialogue the various EI programmes run to support innovation and the commercialisation of knowledge, noting recent developments such as the IP protocol and the central technology transfer office within EI.

From the floor

Further points raised or added to in the context of contributions from the floor were:

- The need for each agency to adopt strategic goals
- The potential to support curiosity driven research, as long as areas were within the fourteen prioritised areas.
- The general consensus among funders and other players that there is currently no national research strategy in place, the existence of Technology Ireland notwithstanding
- The anticipated increasing importance of thematic areas of research to align with and underpin the prioritised areas
- The importance of humanities and social sciences in innovation
- The need to recognise that research and scholarship in arts, humanities and social sciences were valuable in and of themselves, for their intellectual and cultural impact, and for their economic and social value.
- The pressing need for an overall National Research Strategy.

7. Conclusion

In his concluding remarks Professor Nolan noted that the challenge of research prioritisation had not been resolved by the RIA event but a number of principles had been established. There was an acknowledgement that the system has been transformed, and of the importance of the human capital. There was a concern to establish balance across the system on the basis of the very broad value of the full range of research to our society and also recognition that there is not, currently, a national strategy for research in place.

In winding up the proceedings, Professor Drury noted that while the challenge of research prioritisation and its effects had not been resolved the Dialogue had produced a better appreciation of the problems arising.

He confirmed that the debate would continue, and that the issues as summarised immediately above remained concerns for many stakeholders.

The Academy would reflect on how best to take the matter forward constructively. Possibly a meeting on sustaining engagement with international research might be one useful approach to our overall goal of developing a smart society, not just a smart economy.

Appendix I Context to Government Adoption of Research Prioritisation

The material in this Appendix is sourced from the Report of the Research Prioritisation Steering Group (RPSG) and from the joint press release from the Minister for Jobs, Enterprise and Innovation accompanying publication of this report on 1 March 2012.

The Research Prioritisation Steering Group, chaired by Jim O'Hara, former General Manager of Intel Ireland, presented its report to the Minister for Jobs, Enterprise and Innovation, Richard Bruton, T.D., at end 2012. The recommendations in this report were agreed *in total* by Government on 1 March 2012 and adopted as policy, funding and structural objectives for public Science, Technology and Innovation (STI) investment.

Appointment of the Research Prioritisation Steering Group was driven by belief that there was a need for refocusing public investment in STI, a necessary refinement of the broad areas around which STI budgets had been constituted for the initial stage of building a critical mass of expertise in strategic underpinning science and technology.

Moving into a second phase of STI investment the aim was to build on the strengths to emerge from the decade-long serious level of public, and indeed private, investment in STI, by targeting future investment in areas that link directly to current and likely future economic and societal needs. The view of the RPSG was that a step change was required to target public investment in research on the criterion of potential for economic return, particularly in the form of jobs. Forfás supported the work of the Steering Group and undertook the necessary information gathering, analysis and distillation of evidence.

The modus operandi of the analysis was that potential candidate areas for future STI investment had to fulfil each of the following criteria:

- The priority area is associated with a large global market or markets in which Irish-based enterprise already competes or can realistically compete
- Publicly performed R&D in Ireland is required to exploit the priority area and will complement private sector research and innovation in Ireland
- Ireland has built or is building strengths in research disciplines relevant to the priority area

- The priority area represents an appropriate approach to a recognised national challenge and/or a global challenge to which Ireland should respond

The Steering Group concluded that 14 areas of application should receive the major part of public investment because of the potential of these areas to deliver jobs.

The list of 14 Recommended Priority Areas of Focus is as follows:

- A Future Networks & Communications
- B Data Analytics Management, Security & Privacy and Processing
- C Digital Platforms, Content & Applications
- D Connected Health & Independent Living
- E Medical Devices
- F Diagnostics
- G Therapeutics - synthesis formulation, processing and drug delivery
- H Food for Health
- I Sustainable Food Production
- J Marine Renewable Energy
- K Smart Grids & Smart Cities
- L Manufacturing Competitiveness
- M Processing Technologies and Novel Materials
- N Innovation in Services and Business Processes

This list of fourteen areas was distilled from a much broader canvas of potential options. The selection of fourteen areas for prioritisation was not intended to imply parity in the allocation of investment as between each of these areas. The future context is envisaged as one in which all Departments and all research funders must prioritise and must be able to show a return on investment.

In addition to identifying the prioritised areas of application the Steering Group identified two other over-arching goals of public investment in STI needed to attain prioritisation but not drawing from the prioritised programme areas. These complementary goals are:

- Research for policy; this would cover, for example, environmental and health research for which there is a public policy need or indeed an international obligation.
- Research for knowledge. This covers an array of underpinning skills and areas of expertise necessary to produce excellent outputs from research.

The RPSG Report recommended that the majority of available funding should be allocated to the priority areas, the platform science and technology undertaken in direct support of the priority areas and certain integrating infrastructure required to support the priority areas.

The RPSG noted that prioritisation cannot and should not be pursued within an exclusively national context. In most instances, the identified areas already connect to established European and global research agendas. The recommended areas provide a basis for strategic engagement in international research programmes, in particular the EU Framework Programme 7 (FP7) and its successor programme, Horizon 2020.

Like the other EU member states Ireland adheres, under the Europe 2020 Strategy, to the headline target of raising combined public and private investment levels of R&D to 2.5% of GNP (approximately equivalent to 2.0% of GDP). Ireland's research intensity rate for 2010 is estimated at 2.16% of GNP (1.77% of GDP).

The wider context of the public finances means that Government investment in research is likely to remain under severe pressure in the years ahead, and yet research needs to stay centre stage in the Government's economic strategy, given the importance accorded by the EU and all high-performing OECD economies to investment in STI as a significant engine of economic growth. The imperative resulting from this combination of limited resource and crucial need is that the Government is focusing investment in those areas most likely to give demonstrable returns in the medium term. At the same time, it is necessary to maintain a sustainable STI ecosystem that looks to long-term national prosperity and wellbeing.

In order to implement research prioritisation across the publicly-funded research system a Prioritisation Action Group (PAG) chaired by Minister for Research and Innovation, Sean Sherlock T.D., was set up under the aegis of the Cabinet Committee on Economic Recovery

and Jobs. PAG is responsible for identifying actions, timelines and lead actors, consulting with industry players and identifying necessary sources of funding.

A further initiative to ensure the effectiveness of the State's R&D investment was Government approval in January 2012 for the drafting of legislation to extend the remit of Science Foundation Ireland to include funding of applied research in order to support the development of research findings into commercial opportunities. That amended legislation is in train.

Appendix II Programme for the Dialogue on Research Funding in Ireland



Royal Irish Academy

Dialogue on Research Funding in Ireland

Thursday, 18 October 2012

Confirmed Schedule

10.30am: Registration & Coffee

11am: Welcome: President, Royal Irish Academy, Professor Luke Drury

Opening Address: Mr. Sean Sherlock, T.D., Minister of State for Research and Innovation, Department of Enterprise, Jobs and Innovation

11.15am Introduction to Panels – Chair: Professor Philip Nolan, NUIM

11.20am: Researchers Panel: Speakers x 5 minutes

Topic: What are the strengths and weaknesses in the current system?

- Professor Nicholas Canny, NUIG
- Professor Orla Feely, UCD
- Professor Paul Ross, Teagasc
- Professor Ken Wolfe, TCD

Questions from the audience

11.55am: Higher Education Panel Speakers x 5 minutes

Topic: Why should higher education institutes do research?

- Ms Mary Doyle, DES
- Professor Ellen Hazelkorn, DIT
- Professor Patrick Prendergast, TCD

Questions from the audience

12.35pm: Break for Lunch

1.30pm: Industry and Society Speakers x 5 minutes

Topic: Why do industry & society need publicly funded research?

- Mr Brian Donovan, Eneclann
- Professor John Fitzgerald, ESRI
- Dr Colin Lyden, Analog Devices
- Dr Ena Prosser, Fountain Healthcare Partners

Questions from the audience

2.15pm: Agencies Panel Speakers x 5 minutes

Topic: Is the current research funding system fit for purpose?

- Mr Enda Connolly, HRB
- Professor Mark Ferguson, SFI
- Dr Eucharía Meehan, IRC
- Mr Gearoid Mooney, EI

Questions from the audience

3.00pm: Closing session

3.30pm: Final remarks: President, Royal Irish Academy, Professor Luke Drury