

C.H.I.U. Submission to ICSTI Commission on
Framework for an Overarching National Policy
for Research and Technological Development

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Executive Summary

This summary highlights briefly some of the main points made by C.H.I.U. in this submission:-

- Terms of Reference of the Commission are not clearly defined and are not consistent with previous government definitions.
- Universities are major stakeholders and seek to work in partnership with government in the policy formulation process.
- National science and innovation policies that would provide the firm foundations and clear context necessary for the effective formulation of overarching strategies relating to RTD are either non-existent or very weak.
- One overarching/governing funding agency is not recommended. Diversity of funding sources is a good thing and should be protected. It is recommended that instead of one controlling body, there should be a coherence between funding agencies and a coordination (not control) of individual agency policies and activities to prevent serious overlap and inconsistencies.
- Responsibility for coordination of research policy and related activities should reside in the most senior central government office and not a line department – i.e., Taoiseach's Office.
- Higher education is integral to sustainable research and the most appropriate agency to advise Government on combined higher education and research issues is the HEA.
- Universities should be consulted by the funding agencies when preparing science/research policies and funding schemes.
- The Commission must have full regard for the importance of academic freedom (curiosity driven research) - this has been shown to be a huge driver of innovation in the US and is a core tenet of university research.
- There is a need for the creation of a research career path within the third level sector.
- Coherence between agencies should be seen in terms of the development of the European Research Area.
- A system must be put in place to give researchers easy access to the information on the large numbers of funding schemes available.

1. Introduction

The Conference of Heads of Irish Universities (C.H.I.U.) welcomes the opportunity to make this submission to ICSTI. As the main research providers to government universities would wish to work as partners in all national RTD efforts. In the past individual agencies developed new policy and schemes independently of the other research funders and independently of the universities. This practice has been undergoing change in recent times. It commenced with the development of the PRTLII Programme which was based on a partnership between HEA/DES and universities that involved universities in providing, from private sources, up to 50% of the funding for programme projects. Currently the issue of indirect costs (overheads) for research is being very effectively dealt with in a forum that includes **all** of the stakeholders from government and the third level sector. Science Foundation Ireland (SFI) has worked very closely with the third level sector in planning and developing new funding schemes. These are excellent examples of treatment of the third level as active partners with government, which should be developed as a model for all such processes. This partnership approach has been reinforced by the appointment of a C.H.I.U. nominee to the Commission which is consistent with the commitment made in the Programme for Government “to ensure that structures and mechanisms for overseeing national policy on research are improved we will implement change on an agreed basis”.

The recent large investment in research by the government poses a welcome challenge to the universities. Traditionally we have been perceived as primarily teaching institutions and our major contribution to the economy through the production of highly qualified graduates. Of course research has played a very important role in the past and we would have always viewed this as one of our core activities. Indeed we do not separate research and education as they are inextricably linked and strongly complement one another. The government now recognises that research is not a luxury but a necessity for the development of Ireland as a key player in the global environment. In the IDA annual report 2001, the Chairman recognises the fundamental role of both education and research in economic development. Research must be seen as part of central government policy underpinning a wide range of issues of national importance. It follows that responsibility for an overarching research policy framework should be held at the highest level in government (Taoiseach).

Without prejudice to other research providers the seven universities represented through C.H.I.U. are the largest clients for the research funding agencies. In the context of the development of an overarching framework for national policy in RTD our focus is on the role of universities and their constituent researchers. This is primarily from the perspective of the university as a public body providing an environment for advanced learning and research while recognizing that the outputs of such research should be commercially exploited where relevant. It is informed by concerns for the postgraduate students, researchers, technical, administrative and financial staff all of whom are deeply involved in supporting national RTD policy.

C.H.I.U. would be concerned with any developments that could threaten the current diversity of activities, focus and support by government departments and agencies in research; we believe that there is strength in diversity.

C.H.I.U. would encourage greater coherence at all levels between the agencies to maximise state investment in research and to avoid duplication of effort and funding. There should be greater coherence at a policy level between the agencies to create an attractive environment for researchers. There are many areas where our national agencies could co-operate better to create a seamless interface for the researchers, administrators and financial staff of the universities.

Researchers are currently faced with a large number of agencies and funding schemes. There is a need for a good single information point for all funding schemes. There should be co-operation between all related national agencies when setting dates for Calls for Proposals and submission deadlines.

Ireland, mainly through the universities, has benefited greatly in the past from research funding through the European Commission Framework Programmes. We are now part of the process of developing a European Research Area (ERA). Part of this development is encouraging greater cooperation between funding agencies across Europe. Systematic co-operation at a national level would be a major step in achieving and helping this objective.

Currently the agencies fund those researchers who succeed in a highly competitive national arena. This should give agencies the confidence in the ability of these researchers to deliver world class research. They should also have confidence in their judgment and ensure that there is consultation with the research community for the development of policy and funding schemes. It must be remembered that our researchers access not only the national programmes but also those offered by the European Commission, the Wellcome Trust (UK) and the National Institutes for Health (NIH).

The issues outlined above are dealt with in more detail in the following sections. First there are two general sections that examine issues arising from the actual Terms of Reference of this Commission and the nature of the role of university research. Specific topics are then discussed under the broad headings of Structure, Policy and Implementation as indicated in the Terms of Reference. We view this document as a contribution to the policy formulation process which we consider would benefit greatly from ongoing consultation between the Commission and the universities.

2. Commission's Terms of Reference

Scope

C.H.I.U. considers that the Commission's Terms of Reference as framed may convey the impression that Research Technology and Development is a neat and discrete area for policy formulation and implementation, and that the related structures and mechanisms can be galvanised under a coherent overarching framework with a single purpose of underpinning innovation for economic and social development. Even the use of the term "Research and Technological Development" instead of the term "Research Technological Development and Innovation" used in the National Development Plan and the new Programme for Government is somewhat confusing. The relationship of the area comprehended by RTD with previously used concepts of National STI policy or the national system of innovation or indeed national science policy is unclear.

The Terms of Reference twice refer to research and technological development in the context of underpinning innovation for economic and social development. This is a somewhat narrow interpretation of research. Research has a much broader context that links to cultural development and curiosity driven scholarly scientific activity. Enterprise Ireland and the Irish Council for Science Engineering and Technology (IRCSET) fund the Basic Research Grants Scheme that supports curiosity driven scientific and engineering research. The Irish Research Council for the Humanities and Social Sciences (IRCHSS) fund research in areas that span fields that would normally be considered to be outside the narrow definition of innovation. In fact areas of research supported by the Humanities Council are key to supporting the development of a Knowledge Based Society which is one of our national aspirations. For example, the development of digital media requires a strong input from the Arts. The HEA core grant to universities supports research for scholarly endeavour. It is important that the Commission members recognise this and that the broadest possible perspective on research is used as a reference point for the Commission's deliberations. The task of the Commission is made all the more difficult because of the lack of consistency or clarity by government in dealing with concepts that impinge on national research policy as examined in the paragraphs that follow.

RTD v RTDI

The concept of a national policy for "Research and Technological Development" requires some clarification. In the National Development Plan the term "Research Technological Development & Innovation (RTDI) is consistently used. The Plan explains that the Government's rationale for investing in RTDI is based on acceptance "that there is a strong link between investment in the research and innovation base of the economy and sustained economic growth". The Terms of Reference refer to national policy for RTD as "underpinning innovation for economic and social development". Is it intended that RTD policy be seen as being wider or narrower or the same as RTDI policy?

Government Policy on RTDI

The Government's "Agreed Programme for Government" adheres to the term "Research Technological Development and Innovation" to outline its policy in this area. The provisions under this heading cover a wide range of areas including open access broadband, schools' IT programme, provisions and structures to develop research capacity and the study of physics,

chemistry and maths. It is not clear whether the Commission's Terms of Reference are intended to comprehend all of the areas to which the Programme's RTDI provision relates. With regard to areas of particular concern to the universities, C.H.I.U. considers that the Government Programme makes the following clear policy statements that set out firm current national policies as a context for any consideration by the Commission of structures and mechanisms for the formulation and implementation of national policy for Research and Technological Development.

- *We will work to ensure that Ireland develops a world-class research capacity. We also recognise the importance of encouraging a dynamic research culture and will continue to support research on the basis of recognising the distinct, but also inter-connected roles of different programmes, from individual grants up to more targeted support for areas of national strategic interest.*
- *We will build the capability of firms to carry out and manage R&D in Ireland.*
- *We will ensure that the Programme for Research in Third-Level Institutions administered by the Higher Education Authority on behalf of the Government is maintained with funding rounds being placed on a multi-annual basis.*
- *We will place Science Foundation Ireland on a statutory basis as a dynamic vehicle to provide funding for areas of strategic national importance including ICTs and biotechnology.*
- *We will bring together the Irish Research Council for Science, Engineering & Technology and the Irish Council for Humanities and Social Sciences Research as parts of a new council.*
- *We will ensure that all major research funding is based on external assessment.*
- *In order to ensure that structures and mechanisms for overseeing national policy on research are improved, we will implement change on an agreed basis.*
- *We will work to ensure that Ireland maximises its draw-down under the EU 6th Framework Programme for Research and Development.*
- *We will actively support research collaboration between firms and third-level institutions.*
- *We will seek to improve structures and practices to enhance the commercialisation of publicly funded research.*

Furthermore, the Taoiseach, in a speech in UCD on 6th March, 2002 made the following strong statement about the direction of Government policy for support for research which again must be regarded by the Commission as current national policy:-

“The Government is fully committed to continuing to support the development of a vibrant research community in Ireland. We are committed to ensuring that there are a range of funding avenues open so that we have no return to the days of a highly prescriptive research policy. While we have to make sure that we invest strategically, we also have to let the academic community meet the challenge of developing organically. With funding schemes providing for individuals, institutions and national strategic priorities, I believe that we are now reaching a position where Ireland will be able to become internationally recognised as a research centre”.

RTD and Innovation

“Making Knowledge Work for Us” (the STIAC, or Tierney Report, 1995) recognised that “innovation is a complex process” and that the concept of a “national system of innovation (NSI)” has been developed internationally to identify the key factors influencing innovation”. It acknowledged the lack of an integrated NSI in Ireland and advocated that “the Government must recognize and promote a long-term investment strategy to build up the elements of the NSI”. It further stated that “Fundamental to this is the need for an integrated national STI policy”. It also proposed that “social sciences should be part of the national S&T system”. It is unclear under the Commission’s terms of reference whether the term “RTD national policy” is intended to be the same or to comprehend less or more than the term “national STI policy”. As part of STI policy the Tierney report defined the process of innovation as

“a highly interactive system involving a range of inter-relationships and feedbacks between basic research, applied R&D, marketing, design and financial backing. During this process the knowledge base is constantly addressed for a wide range of information required in modern innovation”

The Government White Paper *“Science Technology and Innovation”* (1996) sought, as a critical feature of STI policy, “to strongly and overtly link Science and Technology to Innovation and to place it in the context of national development”. It held that “universities and similar institutions providing basic research and the development of high levels of knowledge and skills” were an important component of the National System of Innovation [NSI].

The issues involved in developing an innovation policy are therefore much wider than structures and mechanisms for RTD policy formulation and implementation.

Innovation has to permeate policy formulation and implementation across the public and private sectors. It also includes social as well as economic development and must embed itself in the minds and actions of the people. An innovation culture capable of giving Ireland competitive advantage can only take hold and be sustained through increased investment in the country’s human capital through higher education and research. The universities are central to the NSI and are happy to work as partners in the formulation and implementation of all related policy to ensure that their contribution to innovation underpinning economic and social development can be maximised.

The assignment of responsibility for the formulation and co-ordination of policies and programmes to the Office of Technology, a sub-office of a line Government department, and to Forfás, a sub-agency of that Department, was fundamentally flawed. That Department has no direct responsibility for the main providers of research in the country, the universities, and failed to develop satisfactorily the consistent and constructive partnership approach with them, necessary to achieve the coherence required for the effective development and pursuit of national RTDI policy.

Need for a National Science Policy before an RTD Policy

As well as being an integral part of the NSI, universities and scientific research are formally regarded in some countries as key elements of what is called the “*science system*”. The report, “*The State and Quality of Scientific Research in Finland: A Review of Scientific Research and its Environment in the late 1990’s*”, [Edited by Kai Husso, Sakari Karjalainen & Juamas Parkkari, 2000] makes the following distinction between the science system and the innovation system -

“The hard core of the science system consists of universities and research institutes, but it also comprises companies with R&D operations as well as government organisations responsible for science and technology policy. The innovation system additionally comprises business and industry more generally as well as all the economic structures, political organisations and institutions that have a direct or indirect impact on research.”

The Report also advocates that science policy should be developed from three different standpoints -

“It should be developed, first, as a separate policy sector; second, in conjunction with technology policy, aiming to establish a free-flowing dialogue; and third, as part of the national innovation system and its broad perspective. Science and technology policy, for instance, should be developed when there are common interests at stake, or when decisions are required on mutual co-operation or a division of labour. This would at once make it easier to strike a balance between scientific relevance and industrial – and, in a broader sense, societal – relevance”.

With regard to the restriction in the Commission’s Terms of Reference to policy that underpins innovation for economic and social development the Finnish Report has the following pertinent warning that should be heeded –

“as far as the innovation system is concerned, it is important that sufficient scope is allowed for the independent development of science policy and the science system and for their own objectives. If they are deprived of that independence, tensions may begin to creep into the development of science policy and the innovation system which eventually will give rise to political competition and the adverse consequences that inevitably follow”.

The OECD STI Report – “*The Management of Science Systems*” [1999] addresses the differences between science and innovation and the relationship between them in clear and simple terms -

“The aim of science is to understand the laws of nature (and the characteristics of societies); that of innovation is to develop and market new products and processes. These two activities are therefore intrinsically different (OECD, 1998a; 1997a). Innovation involves certain activities that have little to do with science, such as the relation to the market, technical development, creation of a firm. Moreover, research results seldom lead directly from science to innovation. In-depth studies on how innovations are developed show that scientific research contributes to innovation indirectly rather than

directly by providing solutions to economic and societal problems, by transferring instruments developed for research purposes to industry, by training researchers who are later employed by industry (Martin and Salter 1996)”

Universities, as part of the national science system and as an integral component of the National System of Innovation, are required to respond to competing and sometimes conflicting expectations. As the above Finnish Report states –

“The challenge for universities today is to develop their operations as an integral part of the science system, as part of the public sector and as part of the national innovation system. Although there is of course some overlap in terms of these development requirements, they are not always easy to fit together. The main source of difficulty is the contradiction between the outside steering of universities and the science system, on the one hand, and the internal values and objectives of scientific research, on the other”.

Maximising the ongoing contribution of the universities to the NIS can only be assured by policy measures that are supportive of or complementary to the core missions of universities.

The contribution of the wider education system to the National Innovation System and economic growth is currently a matter of political concern. The Minister for Education and Science, set up the Task Force on the Physical Sciences on 26 October 2000 to address concerns about the declining levels of participation in the physical sciences at second level and in higher education and in recognition of the fact that the development of the skills base in the area of the physical sciences is central to sustaining Ireland’s economic growth. The Task Force examined the issues surrounding the decline in take-up of the physical sciences and reported in April 2002 on its findings to the Minister for Education and Science along with a set of recommendations for action. Implementation of the strategy recommended by the Task Force will require an additional €178 in capital investment plus additional recurrent costs of €6m each year. A process of consultation on the recommendation is underway.

The simple reality is that unless a solid foundation for science is laid within the education system, proposals for an overarching framework for RTD will be built on sand. Clearly the policies and strategies advocated by the Task Force must be comprehended by any national science policy and consequentially in a “national policy on research and technological development”.

Relevance of Universities to the Remit of the Commission

The Science Technology and Innovation White Paper stated unequivocally that –

“the university system is responsible for almost all of the basic research carried out in Ireland”

that

“Undoubtedly, the basic research system is a major component of the National System of Innovation ... one of the key determinants of the differential pace of innovation among

countries, is the quality of a country's scientific base, the presence of research initiative and, above all, its education".

and that

"The research capability in the third level system is the largest store of technological human resource available to provide ideas for and to solve problems in innovation, in developing new products and processes and in their widespread application".

It is clear from the above policy statements that the universities' role in research that underpins innovation in economic and social development is central to the issues on which the Commission has been asked to report.

3. University Research

The Role of Universities – Universities’ Act

The extensive remit of universities in research and their autonomy in setting their research agendas is evident from the following provisions in the Universities’ Act, 1997.

The Universities’ Act, 1997 (Section 12) provides that –

“The objects of a university shall include –

- (a) to advance knowledge through teaching, scholarly research and scientific investigation,
- (b) to promote learning in its student body and in society generally ...
- (f) to support and contribute to the realisation of national economic and social development, ...
- (h) to promote the highest standards in, and quality of, teaching and research,
- (i) to disseminate the outcomes of its research in the general community.

The functions of a university as set out in Section 13 of the Act provide *inter alia* that a university

- (b) shall promote and facilitate research,
- (c) may establish by incorporation in the State or elsewhere, or participate in the establishment of, such trading research or other corporations as it thinks fit for the purpose of promoting or assisting, or in connection with the functions of, the university.

The Act also provides, Section 14(2)

“A member of the academic staff of a university shall have the freedom, within the law, in his or her teaching, research and any other activities either in or outside the university, to question and test received wisdom, to put forward new ideas and to state controversial or unpopular opinions and shall not be disadvantaged, or subject to less favourable treatment by the university, for the exercise of that freedom”.

Responsibility for advising Government on Research conducted by Universities

Primary responsibility for advising Government on research in higher education is clearly the statutory responsibility of the Higher Education Authority and not the ICSTI. Such responsibility is given to the HEA under the functions ascribed to under the Higher Education Act 1971. This responsibility comprehends issues of research policy, formulation and implementation and related structures and mechanism and the activities undertaken by the universities to contribute to the achievement of national economic and social development.

It is C.H.I.U.’s strong contention that the issue of research policy cannot ever be satisfactorily or meaningfully considered separate from the issue of the training and education of researchers. The most appropriate Government body to consider these matters combined is the HEA which has the statutory responsibility to advise Government on all higher education issues.

Given the narrow remit of ICSTI in the research area and, C.H.I.U. is concerned that the Commission will not be disposed to view research in universities in its proper perspective which is wider and deeper than research geared to technological development and innovation. C.H.I.U. considers it important therefore, to get on record for the Commission an authentic and authoritative account of the world of top-class university research.

Understanding University Research

Any proposals concerning structures and mechanisms for the formulation and implementation of national policy regarding Research and Technological Development must be informed by a deep understanding of the nature of university research. The success of American national science policy is based on such understanding. Professor Frank H. Rhodes, in his book *“The Creation of the Future – The Role of the American University”* [Cornell University Press, 2000] describes the view of research which underpins the American science system thus –

“To justify research solely on the basis of future commercial value or social benefit or other quantifiable gains is to miss the larger point. We humans are a curious species, driven to explore our past, our present, our relationships, our surroundings, our feelings, our fears. If we are to exist at all, we have to know. That is the underlying motive of all research. Research is organized human curiosity. It is the systematic searching and inquiry about everything around us and within us. If science is the “interrogation of nature”, then research is the endless interrogation of existence, the constant analysis of experience. We cannot be sure, without the test of time, which research will be of lasting benefit or enduring significance”.

The pivotal role played by American research universities in driving economic and social development over the past 50 years is undisputed. The American Government has been careful to ensure that the policies, mechanisms and structures put in place to promote research and innovation have been informed by a keen appreciation of the need to preserve the ethos and strengths of the research university described by Professor Rhodes as follows:-

“Research universities conduct research. They are not alone in this; industry, government, the Pentagon, financial analysts, and marketing specialists all conduct research too. But research universities are different. They also teach students. They are unique in another respect: university researchers – the faculty – please themselves, literally please themselves, about the research they do. They select the area that interests them. They define it. They choose some aspect of it and decide how they want to pursue it. They decide how to spend their time on it; how to co-operate in it; how to interpret, share and communicate their work; and how to use their conclusions. No one tells them what to study (unlike industry). No agency requires them to work within a plan, in a particular way (unlike a federal research lab). No superior sets targets, deadlines, or secrecy requirements (unlike the Pentagon). No one suggests their research has to be profitable in the long term (unlike financial analysts) or even useful in a specific sense (unlike marketing specialists). All the university expects is that faculty members will be self-starters, inquiring scholars, creative practitioners, and that they will go on learning, creating, and producing throughout their professional lives. That is the expectation for

every faculty member, for philosophers as well as physicists, for sociologists as well as surgeons and sculptors. In fact, when we think of research, we typically think of work in science and technological fields, but research and the spirit of inquiry it requires permeate the whole of the modern research university – the arts, the humanities, and the social sciences, no less than scientific, technological and professional fields.

This macro view of research does not mean that the activity itself is random. Far from it. The individual researcher, and increasingly in science the team of which he or she is a part, plans a research strategy with meticulous care and painstaking attention. If the results of research are unpredictable, the pursuit of research is systematic, methodical, even plodding. But for all that, there is still a measure of informed hunch, of thoughtful intuition, of inspired guess and aesthetic insight. There is also a stern test of accountability, both at the time of initial funding and at the time of publication of the results. Whatever the source of funding and whatever the place of publication, the merit of the proposed research and the validity of its conclusions are judged by peer review. This is one of the great strengths of American science”.

“No one directed Watson, Crick and Berg to do the work that blossomed into biotechnology. No one foresaw, or perhaps could have foreseen, the results. They happened because there are universities in this country and elsewhere that regard research as both an intellectual calling and a public trust. Path-breaking research is far more than a matter of technique. It depends for its success both on individual creativity and on conditions that allow it to flourish.”

Professor Rhodes further argues –

“that the university provides a uniquely favourable setting for student inquiry and a demonstrably successful incubator for research and discovery ...” and that its nurturing “... involves the recognition of paradox”.

- *Research demands investigative freedom and independence, but it represents a public obligation and trust.*
- *Research arises from private curiosity, but it depends on public support.*
- *Research involves personal discovery, but it provides public knowledge.*
- *Research requires individual insight, but it yields societal benefits.*
- *Research results in basic knowledge, but it produces practical applications”*

He points out that –

“This balance between the independence and responsibility of the individual investigator and the support and interest of the general public depends on an unwritten social contract that has served our nation well. For more than half a century, bipartisan congressional support has recognised the benefits of that compact and that the “virtuous cycle” of public investment in research and discovery, application, generation of wealth, and renewed investment it has supported”.

The same enlightened approach should inform government policy and structures to support university research in Ireland, given the predominant position of universities as the providers of research here and the gradual evolution of a US model of structures to support research.

No Research without Researchers

The centrality of the researcher and education to the research system is an obvious fact that can be overlooked or marginalised when issues like structures and mechanisms and national policy are being considered. The House Committee on Science in a Report (dated 24 September, 1998) to the US Congress entitled “*Unlocking out Future: Towards a New National Science Policy*” underlines this basic point as follows -

“No element of the R&D enterprise is as important as the people who comprise it. Advances that save and improve lives or help secure against potential aggressors do not simply spring forth from the vast landscape of new scientific discoveries. They must be identified from among this crowded field and then moulded, refined, and promoted by an extraordinarily diverse complement of talented, dedicated people. These people are our most important national scientific asset, and we must continuously and diligently nurture succeeding generations of people equally talented and dedicated. We do this largely through education”.

The report elaborates on the importance of the relationship between education and research in universities as follows:-

“A result of this link between education and research is that students and post-doctoral researchers are responsible for actually performing much of the federally funded research done in universities. Thus the students and post-doctoral researchers represent a key component of the overall research enterprise”.

Fundamental to any recommendation for structures or mechanisms concerned with research policy must be the aim to continue to build a sustainable research system. As pointed out by C.H.I.U. in its publication “*Technology Foresight and the University Sector*” (2000) -

“An Irish research system that is firmly based on world class research led by universities is key to this future and the way to ensure long-term sustainability of the system”.

Integral to this system is a seamless connection between research and teaching, the value of which C.H.I.U. explained as follows:-

“This combination of research and teaching justifies itself not solely in the information outputs which research generates, but just as much by the contribution which it makes to the formation of skills and competencies in those exposed to it. Achieving the ambitions for a knowledge based growth will depend as much on this aspect, as on the information outputs generated from research itself. Ultimately, the skills and techniques acquired from exposure to university research enables students to accumulate and absorb such knowledge and to take it with them into industry. This mobility of knowledge embedded in trained manpower is the core of high quality technology transfer”.

4. Structure

Any overarching framework for RTD policy formulation must take into account all the policy areas comprehended by an informed view of the national innovation system if, as the Commission's terms of reference state, the aim is to underpin economic and social development. The range and variety of the different elements of the National System of Innovation (NSI) present a prima facie case for co-ordination and coherence of policies. The Programme for Government already quoted, and the Taoiseach's statement of 6th March 2002, makes is categorically clear, that there will not be one funding agency for research and C.H.I.U. fully supports this policy. From the perspective of universities who are the main research agencies in the country there is a clear need for the research policy and funding bodies to act in a coherent and co-ordinated way in their interactions with universities. It is extremely difficult for universities to serve funders with effectively competing agendas.

There is great benefit in all government departments having responsibility for research related to their remits in that it helps maintain a focus for research schemes, that might well disappear if schemes were concentrated in one location. It must also be remembered that there are diverse reasons why individual government departments provide funding for research. There are very different reasons why the Higher Education Authority (HEA) and Science Foundation Ireland (SFI) fund research. The mission of SFI is to develop Ireland as a location for high-level research excellence in Biotechnology and Information & Communications Technologies thus providing a long-term basis for foreign direct investment. In contrast the objective of the HEA through the PRTL programme is to support the development of institutional strategies for research through infrastructure and recurrent research programmes in the sciences and humanities.

There is often the impression given that by focusing all resources in a single agency it will lead to better services, or that the cost of running schemes in multiple agencies, as opposed to a single overarching agency, is greater. This need not necessarily be the case. It would be useful to see the current administration costs of our funding agencies as a percentage of the total investment in research. Across Europe administration costs for agencies vary from about 5 to 13%. For example, administration costs for the Framework Programme is about 7%. It would be a desirable objective to have all agencies setting targets to minimise administration costs without compromising effectiveness.

Currently most national funding agencies develop policy and structures, for the most part, through an internal process. We believe that, given the key role of the universities, C.H.I.U. should be an active participant in these developments. Recently C.H.I.U. has worked with SFI in developing their new funding schemes introduced in March 2002. This has been a very rewarding interaction as it has allowed the research community to be actively involved in the detailed planning of these new schemes. For SFI it has given them the collective input from the universities thereby expanding the expertise of their own organisation. The SFI approach is based on the philosophy of the National Science Foundation (US) where active researchers move from universities to work in the NSF for a fixed period.

Another example of cooperation on a policy issue is that related to the payment of indirect costs (overheads) for research. There is a steering group set up by Forfás and the HEA that includes all

of the stakeholders from government and the third level sector. The group is working towards a policy framework for the payment of indirect costs that will be agreed by all of the partners.

This type of partnership must be a key element of future structures as funding agencies will stagnate and lose touch with the research environment if they do not actively involve researchers and the universities.

There are two aspects of looking at best practice in other countries that the Commission should take into account. Best practice in one country may not necessarily be transferable or successful in another country. Regardless of the structures in place it is the researchers who will determine the effectiveness of research investment by their output. The Commission should consider how the research community in those countries studied view their existing national policy frameworks. Asking the funding agencies about the effectiveness of their current systems may not elicit a useful response.

C.H.I.U. supports the conclusion reached by the HEA from its analysis of international expertise and practice that it is very difficult to derive “a preferred model or structural benchmarks for the organisation of research policy and funding structures which can be recommended for Ireland”. C.H.I.U. agrees with the following trends and principles identified by the HEA from the international evidence examined in its submission to the ICSTI Commission:–

- *“The university as a central research player. A common trend is the increasing proportion of research taking place in universities, with a decreasing role of research institutes,*
- *The provision of multiple and diverse funding opportunities for university research, operating on merit-based, competitive funding processes, open to all research disciplines and areas of scholarship,*
- *The presence of independent mechanisms (outside the Ministry) for the funding of basic research; Research Councils, for example,*
- *The general preference for the ‘sectoral approach’ where Government Departments are responsible for the funding of their own individual research requirements,*
- *The need for a centralised policy co-ordination function at the national level which favours co-ordination ahead of control,*
- *The dysfunctional impact on the research community of centralised top down control mechanisms,*
- *The dangers inherent in centralised models of basic research funding.*

C.H.I.U. considers it best practice for government policy and programmes across its functional areas to be informed by leading edge research in the relevant fields. In the increasing knowledge-based society it is imperative that Government Ministers and Departments carry administrative and financial responsibility for developing research-informed policies and programmes. Any overarching framework must be based on this reality. A further reality that must inform the development of a framework is that it is both clearly inappropriate and unworkable that responsibility for co-ordination of research at a national level should rest with a line Department or with a committee or agency under the aegis of a line department. Such responsibility should be located at the centre of government in the Taoiseach’s Office and not with a line Minister.

5. Policy

There is a clear need for research funding agencies to discuss policy and their prospective programmes on an ongoing basis with one another and their clients, in order to avoid duplication of effort and ensure the most effective investment of exchequer funds. There is a model already in place through the Merrion Agreement¹. We discuss below some important policy areas on which agreed inter-agency approaches are vital to the coherence and sustainability of the research system.

Research Career Path

The issue of developing specific research career paths is extremely important to the long term development of a dynamic research community in Ireland. The current funding of the universities allows for the appointment of academic staff based only on the number of students. While this was appropriate where the policy imperative was to expand the number of undergraduate students, it is a completely unsuitable funding arrangement for the promotion and development of the research capacity of universities. In order to build research capacity we need new strength to support the creation of research track positions (professorships, etc) in the universities.

Research is done by researchers and we must ensure that the best personnel are attracted to research. This means ensuring that our undergraduates see research as a career option and not simply a means to obtain a higher degree. Unfortunately the system as currently structured does not provide the option of research as a career in itself. Our postgraduate stream facilitates the gaining of a higher degree to give better employment prospects outside the academic/research environment. Those interested in continuing in research may pursue the life of a “postdoc” for some years but in the long term the only real employment prospect is that of a teaching position in a third level institution. Indeed, there is a variable approach among the funding agencies to postdoctoral researchers. Ideally, these should be normal employees of the universities for the period of funding from the sponsoring agency. Some postdoctoral fellows currently have no clear status and this is certainly not conducive to creating a research career path.

There is a clear need for our national agencies to take up this challenge and facilitate the development of careers in research. C.H.I.U has already taken steps in this direction by proposing a national salary framework for researchers. This has been unilaterally adopted by the Wellcome Trust and is used as a reference for funding researchers employed under their programmes in Ireland. The agencies can make a major contribution by ensuring that researchers are properly recognised employees of their host university.

¹ The Merrion Agreement is a cooperative action between a number of funding agencies to work better together in the areas of policy implementation.

Our universities are looking at improving the existing good practice in research management. This includes issues such as ethics, scientific misconduct, good supervision practice for postgraduate students and good publication practice. Already the Wellcome Trust is imposing certain conditions in these areas on its contractors. The universities would like to work with our funding agencies in developing national codes of best practice.

We cannot look at this purely in a national context as Ireland is a member of the European Union and is committed to the development of a European Research Area. If we are to be successful in research then Ireland must become a very attractive location for national and international researchers. The European Commission established a High Level Group on Mobility of Researchers in 1999. They reported on the main obstacles to researchers moving to other countries in Europe [Final Report of the High Level Group on Improving the Mobility of Researchers, European Commission, April 2001]. Currently there is another expert group looking at implementing the recommendations of that report. For this reason it is important that agencies ensure that they all have consistent policies towards researchers funded under their schemes. There is currently a national steering group established by the HEA who are drawing up a series of recommendations in this regard. This follows on from the report from the Skills Group “*Benchmarking Strategies on Attracting Researchers to Ireland*” (HEA/Forfás, 2001)

Peer review

Research proposals to funding agencies contain ideas that can only be judged by competent experts in the field. The review of proposals must be transparent, objective and consistent. In recent years there has been a move to have evaluation of proposals to national schemes to be done almost exclusively by external peer review. The opinion of international experts is very important and helps to benchmark the quality of Irish research internationally. However, it must be remembered that many of our researchers are considered as international experts in other countries and act as reviewers for funding agencies including the European Commission, UK Research Councils and the CNRS, to name but a few. The agencies should have the confidence in Irish based researchers to allow them greater involvement in the peer review process.

There will of course be conflicts of interest when Irish based reviewers are involved but, given the global nature of research, this can also arise with international reviewers. In all cases there must be clear procedures to manage conflicts of interest rather than always seek to eliminate them by excluding Irish based researchers for the peer review process.

Research Areas

Each of the national funding agencies has the objective of building scale and expertise in a wide or narrow range of areas depending on their remit. For example, the Humanities Council funds research across a wide number of fields in the Humanities and Social Sciences. In contrast, funding by the Marine Institute is clearly focused on marine related areas. There is also the new approach of Science Foundation Ireland that is to be welcomed. The primary objective of this relatively new agency is to build research capacity to high levels in Biotechnology (Bio) and Information & Communications Technologies (ICT). For both of these fields, in contrast to the

marine area, it is difficult to set the limits of these two areas. For this reason SFI has taken the decision to fund those sciences that contribute directly to and underpin Bio and ICT. There will always be some overlap in the areas funded by different agencies but this should not be regarded necessarily as a problem. Indeed it is a good thing that agencies may be competing for applicants. Proper and effective co-ordination would eliminate any possibility of double funding.

Funded Schemes

Our agencies currently fund research through the provision of infrastructure, project and fellowship schemes. A major obstacle is that currently researchers must apply to different agencies to obtain funding for the various components of their planned research programmes. There is a clear need for a coherent policy between the funding agencies in this regard. For example, SFI, HRB, IRCSET all fund research in the biomedical sciences. It would be highly desirable for these agencies to set coherent policies in this area and to provide researchers with a single point of access to information.

Intellectual Property

Research is the process for generating new knowledge. The knowledge or Intellectual Property (IP) can be viewed as the commodity produced from this process. This IP may be a specific genome sequence or a greater understanding of an aspect of Irish history. In any case it is a valuable commodity from a social, cultural and economic point of view. This represents great potential for the creation of start up companies, commercialisation of research and generation of a revenue stream through licensing and patents. We see that the ownership of IP is becoming a key issue in global politics. For example, one company now contests that it owns the full rights to the testing of breast cancer [New Scientist, 13 July 2002]. This may be unacceptable but it is an issue that must be fully addressed in any national IP policy. We are aware that ICSTI has been considering how IP should be treated and has carried out a series of country studies in this regard. We await with great interest their conclusions and recommendations. We have been involved in the preparation of the SFI Columbia Report and welcome its recommendations. The proposed network of support for commercialisation and exploitation of IP involving the universities in-house expertise and that of SFI and Enterprise Ireland is a positive holistic approach.

The universities are the major source of new knowledge from research. Any national approach to support the exploitation and commercialisation of this intellectual property must take this into account. There should be close networking between the funding agencies and the universities in this regard. We believe that the establishment of a centralised agency would be inappropriate.

European Commission – Framework Six (FP6)

The importance to the country of the Framework Programme has been recognised in the following commitment in the Programme for Government:-

“We will work to ensure that Ireland maximises its draw-down under the EU 6th Framework Programme for Research and Development”

In the past the Framework Programmes have provided the core funding of research in Irish universities. While this has changed dramatically with the introduction of significant national funding the role of the Framework Programmes remains a major factor in our success in raising the levels of research excellence for the nation.

The funding won through open competitive tender has grown from €44m in the Second Framework Programme (1986-1990), to €88m in the Third FP (1990-1994), €183m in the Fourth FP (1994-1998), and approximately €125m in the Fifth FP (1998-2002). This drop from the Fourth to the Fifth represents the recent national focus due to high levels of government investment in research. While there was this overall reduction of funds secured it should be noted that most of the universities actually increased their income from framework (approximately 15%). To maintain the highest standards we need to continually compete in the international arena. Agencies must work together to support the universities in the preparation for the 6th Framework Programme, especially with the advent of the new instruments for funding (Integrated Projects and Networks of Excellence). In the past, DETE, EI and Forfás have ensured that there was wide publicity and dissemination of information on framework programmes. Given the increased complexity of the new instruments in FP6, there is a real and urgent need for greater support, e.g., access to travel/proposal preparation support.

There is a perception in some quarters that national funding is now replacing support from the Framework Programmes. This is simply wrong thinking; in the past the European funding was the principal provider of research support in the absence of significant national schemes. However, it must be stressed that the framework programmes are there to enhance national funding and provide for greater transnational European research linkages. In fact, the principle of subsidiarity excludes the Commission from substituting for national funding. The national investment of the last four years has made unprecedented funds available for research. This has allowed the universities to build up our national research infrastructure through the construction of research institutes (PRTLIs) that are fully resourced with modern equipment. We are now in a position to pose a greater challenge to our European counterparts. We wish to work closely with our national funding agencies and government departments in achieving great success in FP6 to help Ireland go well beyond the €190m target set by government.

European Commission – European Research Area (ERA)

The development of the European Research Area has at its core the co-operation of funding agencies in Europe. There are now specific mechanisms in place, Article 169 and funding from the 6th Framework Programme, to support this co-operation. Ireland urgently needs to achieve this internally before our national agencies can reach out effectively to their counterparts across Europe and beyond.

6. Implementation

There are a large number of national organisations (State Agencies & Government Departments) that fund research in third level institutions and public research organisations. Some fund in niche areas such as Science Foundation Ireland and Coford, while IRCSET, IRCHSS and Enterprise Ireland cover a broad range of disciplines. The day to day business of the agencies is to develop funding strategies, issue Calls for Proposals, review applications, issue contracts and monitor progress. While there are some differences, there are many activities that all of the agencies have in common. There should be co-ordination between all of the funding bodies to ensure consistency of approach and treatment of the research community at large. The list below highlights those areas where co-ordination is desirable:

Application Process

Publication of Call for Proposals, Information Sessions, Clear Application Guidelines, Easily accessible documents (preferably from websites), Electronic Submission.

There should be minimum time delay of two months between the publication of Calls and the Submission deadline. All documents (General Information, Users Guide, Application Form) should be easily available downloads from website. There is scope for the harmonisation of Application Form Design; for example, the track record of individual scientists could be in a standard format for **all** agencies. The advantages/disadvantages of electronic submission should be investigated with a view to developing a system common to all agencies. It would also be highly desirable from the perspective of researchers to have a single information point for all schemes organised according to discipline. Currently researchers in the Life Sciences have at least 6 agencies to which they can apply for funding.

With the support of InterTrade Ireland we are already developing a single all-island third level web portal to allow access to research expertise on the island of Ireland. We are also working with the European Commission in the development of a researcher's mobility web portal and mobility centre: single entry point for all information relevant to researchers moving to Ireland (including visa, taxation, social welfare and housing). It would be highly desirable for all of the national funding agencies to create a single entry point for information on all national funding schemes. This would not only benefit researchers in Ireland but would also facilitate easier access to those overseas.

Submission Deadlines

Better planning of deadlines within and co-ordination across agencies.

There should be a concerted effort on the part of all the funding agencies to take into account the academic year when setting deadlines especially for schemes that recruit postgraduate students. There is a widespread belief that staggered deadlines are optimal; however, the possibility of co-ordinated single deadlines for similar schemes in different agencies should be considered.

Proposal Assessment

Review process that is transparent, fair and objective, Assessment Manual, International Involvement, Conflicts of Interest, Timely Response, Detailed Feedback

Proposal assessment should be based on best international practice using international peer review. The process should be transparent with the Assessment Manual and Review Forms all available at the publication of the Call. To ensure a fair and objective procedure the appropriate national and international experts should be involved. Applicants should expect a response not more than two months after the deadline. All applicants should be provided with detailed written feedback.

Contracts & Finance

Clear negotiation procedure, IP Policy, Ethics, Good Research Practice, Clear Financial Guidelines (staff, equipment, materials/consumables, travel, collaboration, infrastructure, research overheads) Initial and Staged Payments of the Grant.

Contracts and finance, good research practice, ethical guidelines and IP policy should be consistent across the funding agencies and developed in collaboration with the client institutions that sign contracts. There should be a clear contract negotiation procedure before final award of grant.

Scientific and Financial Reporting

Clear scientific reporting guidelines (technical details, research management, outputs). Financial reporting details required for audit.

Particular attention should be paid to the type of financial reporting required. The NDP has clear guidelines for reporting and it would make sense if those guidelines were to be applied consistently by the agencies.

Project Evaluation

Indications of success defined at the outset. Scientific peer review as part of evaluation process.

It is most important that each programme have clear indications for benchmarking success defined at the outset. It would be inappropriate to introduce new indicators retrospectively. International peer review should also be applied in this regard.

Programme for Monitoring & Development

Evaluation of Agency Programmes based on well-defined indicators.

It is important for the clients (and the agencies themselves) that all programmes are evaluated by scientific peer review based on the original goals of the programme.