

# Consultation Paper for Successor to Strategy for Science, Technology and Innovation – Response from Institute of Technology, Sligo

Institute of Technology, Sligo (IT, Sligo) welcomes the opportunity to contribute to the formulation of the next Strategy for Science, Technology and Innovation. At this critical juncture of our national sustainability and development programme, the application of the nation’s knowledge generation, innovation and enterprise resources to the maximum extent possible is vital. The Higher Education sector has a key role in this. The Institutes of Technology have particular value and potential in meeting regional dimensions of the task, and in working with businesses (SME and MNE), both to solve current problems and build future knowledge generation, innovation and enterprise capacity.

IT Sligo, along with its Connaught Ulster Alliance partners in Galway-Mayo Institute of Technology (GMIT) and Letterkenny Institute of Technology (LYIT), has a core function in supporting Economic and Social sustainability and development in the West/North West region. It shares this function in a cluster arrangement with NUI Galway. In this regard, our response includes an appropriate focus on regional aspects of the national strategy that are required to achieve that sustainability and development. These include focus on:

- Regional infrastructure, both human and capital
- Regional Development in conjunction with state agencies such as EI and IDA
- SME start up, support and capacity building
- North-South collaboration and synergy
- European regional action

What follows highlights key opportunities and gaps from an IoT perspective. From a more general perspective the successor to SSTI should rebalance the research landscape that has developed in recent years. A general research infrastructure programme (a successor to PRTL) and run by the HEA should be re-initiated. From this baseline SFI should build on a broader range of research areas, rebalancing its portfolio to include more blue skies/longer term research. This would then allow more industry/business orientated agencies such as EI and IDA to pursue the more medium term needs of those actors in key targeted areas.

A further need is for greatly increased availability of funded post-graduate opportunities across all areas of research.

PILLAR	KEY AREAS TO BE EXPLORED
1. Investment in STI and key goals/targets	<ul style="list-style-type: none"> <li>• What should Ireland’s ambition be in STI? Ireland’s ambition should be to capitalise, to the maximum extent possible, on the significant knowledge generation, innovation and enterprise resources that exist in the State as a result of substantial investment in education over previous decades, and its success in attracting foreign direct investment in key sectors</li> </ul>

	<ul style="list-style-type: none"> <li>• Ireland is currently an innovation follower and lags other small developed countries in R&amp;D intensity. Should we have more ambitious targets for investment? Ambitious targets are always welcome, but smarter targets are likely to be more impactful. The current silo approach (in Government Departments, Agencies and HEIs) to knowledge generation, innovation and enterprise support and capacity building has limited potential to maximise on our national potential. We need an Open Innovation approach in each of these key stakeholder institutions. The key message to businesses and citizens should be 'how can we help you', and the intra and inter-stakeholder structures should be designed to encourage businesses and citizens to interact openly with our resources in order to develop intellectual property for the benefit of all.</li> <li>• How can that level of ambition be justified? Where would we target increased funding and how could this be justified? An ambition to maximise potential is self-justifying. The key sector in this regard is the SME sector. This is particularly true in the West/North West region, with its dispersed population, poor infrastructure and preponderance of SMEs in its economic and social economy. Because of these challenges, the multiplier effect for return on investment is likely to be higher in this region than others, as evidenced by the success of externally funded capacity building projects.</li> </ul>
<p>2. Prioritised Approach to Public Research Funding</p>	<ul style="list-style-type: none"> <li>• How can research prioritisation better serve our national objectives of a strong sustainable economy and a better society? This can be achieved by adopting the integrated, interdisciplinary approach that is central to the Horizon 2020 programme. The previous SSTI did not include Humanities and Social Sciences, or Environment, which are key areas in this regard. What is needed is a policy structure that encourages this integration, rather than, necessarily, specific additional funding in particular disciplines.</li> <li>• How best do we identify emerging areas of opportunity and challenge i.e. horizon scanning? By continuing the national dialogue, inherent in this consultation process, on 'what is best for Ireland' in our combined and collaborative activities.  Also by researching opportunities and challenges already faced by other countries; this will provide context for</li> </ul>

	<p>future targets. For example, in the case of FoodHarvest 2020, associated environmental and social research needs can be developed using international agrigrowth research models.</p>
<p>3. Enterprise-level R&amp;D and Innovation Performance</p>	<ul style="list-style-type: none"> <li> <p>• A review of the outcomes of SSTI 2006-2013 shows that targets for the public research base were largely achieved or exceeded. Opportunities exist for further progress in regard to enterprise RD&amp;I activity. How can public policy best support and more effectively optimise the impacts of enterprise RD&amp;I investment – what actions could be taken to (1) strengthen the number of innovation performers in the multinational sector? (2) Broaden RD&amp;I activity in the indigenous sector and build absorptive capacity?</p> <p>The key resource in the HE sector is people. The traditional structures of HEIs as education providers militate against applying that resource directly in support of economic and social enterprise. This is especially true in the Institute of Technology sector, given their particular role in industry support. Where IoTs have been able to assign knowledge generating staff to these activities (normally through external competitive funding), they have had a significant positive effect on capacity building in SMEs. At IT Sligo, the CREST project (an INTERREG funded project with partners in NI and Scotland) is an excellent example. National policy must allow HEIs to recruit and apply appropriate staff for this activity. The return on investment would be multiple, particularly in a region such as the West/ North West, where institutional initiatives have shown that there is clear pent-up research, innovation and enterprise potential, waiting to be released.</p> </li> <li> <p>• Do we need to enhance the suite of enterprise support programmes to further drive innovation in industry and/or is there scope for consolidation of the existing range of support programmes?</p> <p>Enhancement by smart integration and clear communication to potential beneficiaries would be very welcome and impactful.</p> </li> <li> <p>• How can we incentivise firms that are R&amp;D active to scale their research efforts?</p> <p>In the HE sector, it would be by making our staff, equipment and capital resources available in a sensible and productive way. We have found that, once these barriers are removed, SMEs are willing to scale up, based on positive experiences. National policy is required to allow the HEIs to design, deliver and justify this</p> </li> </ul>

	<p>approach.</p>
<p>4. International collaboration and engagement</p>	<ul style="list-style-type: none"> <li> <p>• How can we further increase/strengthen the effectiveness of our international collaboration and engagement across all areas of STI investment in pursuit of economic and societal goals?</p> <p>One of the weakest elements of the current proposal is its cognisance of, and commitment to, the potential for knowledge generation, innovation, enterprise and social cohesion through North-South collaboration. This must be a clear national priority. The likely return on investment is very high. Existing collaborations, mostly funded through INTERREG and related EU programmes, have been extremely successful in building capacity, but the scale needs to be much greater.</p> <p>For all international collaboration and engagement, the research and innovation pipeline in HEIs needs to be refocused to allow us to effectively train early stage researchers for participation in international collaborations. This includes the establishment of key centres, mentoring programmes, and network building activities. National policy needs to reflect the importance of this approach, to enable the HEIs to justify the necessary focus of investment.</p> </li> <li> <p>• What additional measures can be taken to maximise the engagement of industry as a partner in this regard?</p> <p>In the HE sector, this would mean recruitment of the appropriate staff, described above, to build and maintain active and productive relationships with key industrial stakeholders, both at an individual staff member level, and at sectoral level. The lack of ability to recruit these staff is a key inhibitor in the Institute of Technology sector.</p> </li> <li> <p>• What additional measures could be taken to enhance Ireland’s participation in Horizon 2020 and other EU programmes – industry, academia, SMEs and MNCs?</p> <p>The current national programme of H2020 support is excellent, and should be enhanced further. More networking at a regional level or via web-based activities (e.g. webinars) would be of benefit</p> </li> <li> <p>• Are there research policy or programme developments taking place at EU level where enhanced engagement by Ireland could provide opportunities for research collaboration and ultimate economic or societal benefit?</p> <p>The core design criterion of Horizon 2020, solving societal problems through an integrated, interdisciplinary knowledge generation, innovation and</p> </li> </ul>

	<p>enterprise approach, for the benefit of the economy and society, is not yet embedded in our national approach (other than a clear commitment to engaging in H2020 itself). The nation would benefit significantly if this criterion was the driving ambition in the development of our national knowledge generation, innovation and enterprise ecosystem.</p>
<p>5. Organisational / Institutional arrangements to enhance research excellence and deliver jobs</p>	<ul style="list-style-type: none"> <li> <p>• What could we do to further enhance our landscape and institutional arrangements to maximise the impact of research excellence and deliver jobs?</p> <p>There is a key disabling design element in the national knowledge generation, innovation, and enterprise ecosystem in relation to HE institutional arrangements. It is the complete lack of core funding for Institutes of Technology for this activity. This is a particular barrier when we consider the special function of the IoTs in this space. A number of externally funded initiatives undertaken by IoTs, such as mentioned previously, have demonstrated the positive effect and multiple returns on investment. The lack of core funding makes it particularly difficult to justify, at an organisational level, institutional investment in areas not recognised by the core funding structure. National policy needs to change to eliminate this glass-ceiling barrier.</p> <p>Key elements of the negative effect of this lack of core funding are the inability to recruit key staff for the activity, and severe restraints on our ability to support the postgraduate student pipeline (e.g., in relation to bursaries, training programmes, equipment, space and technical support).</p> <p>There should be initiatives to assist HEI to build stronger regional networks that allow targeted interventions with SME's that have been identified as potential growth companies.</p> </li> <li> <p>• Is there a need for a complementary market focused research centre structure in Ireland and how should be organised?</p> <p>The Technology Gateway programme was initially effective in this regard, and should be revived, with a renewed market focus.</p> </li> <li> <p>• How can Ireland optimise its strategic advantages of location, scale and environmental quality as fundamental component of its research infrastructure?</p> <p>By developing an integrated, interdisciplinary knowledge generation, innovation and enterprise ecosystem that is</p> </li> </ul>

	<p>capable of providing an Open Innovation platform for all key stakeholders. By definition, this would need to be highly responsive. An advantage of our relatively small size is that we can be, as a nation, keenly aware of our overall national offering, and effective in combining resources from all of the stakeholder groups and organisations to address particular challenges or opportunities.</p> <p>A potential advantage of our environmental quality is that we have the opportunity to become global leaders in Sustainability research</p> <p>With strong agriculture and tourism sectors, Ireland is also strategically placed to become a leader in researching the economic value of the environment (i.e. natural capital).</p> <ul style="list-style-type: none"> <li>• How can we further increase/strengthen the effectiveness of our national collaboration and engagement across all areas of STI investment in pursuit of economic and societal goals?  Much of what has been set out previously refers. Our objective should be to have an integrated, interdisciplinary knowledge generation, innovation and enterprise ecosystem that is: capable of providing an Open Innovation platform for all key stakeholders; highly responsive and effective in combining resources from all of the stakeholder groups and organisations; focused on addressing particular economic and societal challenges and opportunities.</li> </ul>
<p>6. World class IP regime and dynamic systems to transfer Knowledge and Technology into jobs</p>	<ul style="list-style-type: none"> <li>• The establishment of Knowledge Transfer Ireland has seen an important evolution in our knowledge transfer system but what more can we do to enhance further the transfer of knowledge into jobs?  By continuing to measure and value the related outputs and continuing to incorporate the policy imperative into all relevant policies and supports.</li> <li>• In terms of Intellectual Property policy, are there specific interventions or supports of a legislative or non-legislative nature that would improve the business environment and act as an incentive to create and sustain an innovative culture?  Provide core funding for Institutes of Technology to allow them to maximise the capitalisation of the clear pent-up potential that exists in their regions.</li> </ul>
<p>7. Government wide goals on innovation in key sectors for job</p>	<ul style="list-style-type: none"> <li>• What steps need to be taken to further the translation of investments in STI into the achievement of stated public</li> </ul>

<p>creation and societal benefit</p>	<p>policy goals? How can the strategy enable research programmes to optimally support policy development and actions to address key national challenges in areas such as environment, health etc.</p> <p>Adopt the objective to have an integrated, interdisciplinary knowledge generation, innovation and enterprise ecosystem that is: capable of providing an Open Innovation platform for all key stakeholders; highly responsive and effective in combining resources from all of the stakeholder groups and organisations; focused on particular economic and societal challenges and opportunities. Technologies research should be underpinned by an environmental approach, developed to resource, manage or protect sustainability.</p> <ul style="list-style-type: none"> <li>• What are the synergies between Government’s goals in building a better society and the goals of creating jobs and economic growth? The potential synergies, as reflected in the core design criterion of Horizon 2020 (solving societal problems through an integrated, interdisciplinary knowledge generation, innovation and enterprise approach, for the benefit of the economy and society) are maximising our potential to generate intellectual property and to capitalise on its benefits in a way that is focused on solving economic and social challenges, while also supporting economic and social development.</li> <li>• How can we address national challenges and also provide economic opportunities through development of new products, processes, systems? Through the development of an Open Innovation platform and ecosystem.</li> <li>• How can we address local and national challenges that are also regional and global challenges – how can Ireland through its research turn national challenges into global opportunities in areas such as sustainable land use, urban and rural development, and vulnerabilities to global trends and changes? Ireland is very well placed to be a ‘model’ region for the EU. We have already demonstrated this in our response to the fiscal crisis. We now need to move on to being a model of good practice for a national system that provides a knowledge generation, innovation and enterprise ecosystem, based on an Open Innovation approach that allows us to solve our economic and social challenges and capitalise to the maximum extent possible on our economic, environmental and social</li> </ul>
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	<p>opportunities.</p> <ul style="list-style-type: none"> <li>• How can Ireland harness the opportunities presented by the major developments on observation systems, including the analysis and use of Earth Observation data by a wide array of sectors and users? Our key stakeholders in these areas should be more clearly valued and supported (for example the CIT Blackrock Castle Observatory).</li> </ul>
<p>8. Research for knowledge and the development of human capital</p>	<ul style="list-style-type: none"> <li>• What more can we do to best harness the potential of our knowledge base for sustainable economic and social well-being? Remove the structural barriers to full engagement by Institutes of Technology in knowledge generation, innovation and enterprise.</li> <li>• What additional steps can government take to ensure the development of human capital across the population to ensure the success of the new Strategy? By investing in people in IoTs, including staff focused on knowledge generation, innovation and enterprise activities, and in postgraduate students.</li> <li>• How can we ensure that all the requisite links between research and scholarship are maintained across all RPOs? By investing in the postgraduate pipeline in IoTs.</li> <li>• In order to achieve a sustainable research capacity, are the outputs of our research system at doctoral and postdoctoral level the right ones in terms of volume, quality and relevant discipline? Our volume is too low. The structural barriers presented by the lack of core funding in IoTs mean that ca. 50% of the nation's knowledge generation staff have severe limitations on their ability to effectively engage in postdoctoral supervision. Removing these would have an immediate positive effect, on a large scale.</li> <li>• How can the new strategy support and strengthen the reforms taking place under the Higher Education Strategy and align with the new National Skills Strategy and develop capacity to enable Ireland to deal with new and emerging challenges across the full breadth of government strategies? By supporting the role of IoTs in engaging in knowledge generation, innovation and enterprise activities in their regions.</li> </ul>

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|  | <ul style="list-style-type: none"><li>• How can we better leverage our research talent into the economy? How can those individuals active in research (and those seeking to be), both in the public and private sectors, be best supported to perform and progress including through optimum researchers' careers, recognition and mobility mechanisms.<br/>By recognising the value of the outputs of these individuals in all relevant national policies, and translating this into supports at key life stages, most notably the postgraduate student and the post-doctoral researcher stages. There should also be an increased emphasis on enterprise-linked studentships and research positions.</li><li>• How can gender equality in publicly funded research activity be further enhanced?<br/>By clearly embedding it in all assessment and decision making criteria.</li><li>• How can the Action Plan for Jobs 2015 objective to increase the number of researchers in enterprise be fulfilled<br/>By providing funding to HEIs, and, in particular, IoTs, to support these positions.</li><li>• Should research and innovation performers be supported to engage citizens more actively in the innovation process to achieve optimal outreach to the public?<br/>Absolutely. Inherent in the approach proposed above (establishing a national system that provides a knowledge generation, innovation and enterprise ecosystem, based on an Open Innovation approach that allows us to solve our economic and social challenges and capitalise to the maximum extent possible on our economic and social opportunities), is the active engagement of citizens in describing challenges, formulating research questions and designing systems to capitalise on potential economic and social benefits.</li></ul> |
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