



**TUS**

**Technological University of the Shannon:  
Midlands Midwest**  
Ollscoil Teicneolaíochta na Sionainne:  
Lár Tíre Iarthar Láir

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1. What gaps do you see in the Department's current research and innovation activities? How should we address those gaps in the Department Research and Innovation Strategy?

TUS is broadly supportive of the Departments R&I activities. TUS would encourage the Department to actively support and encourage integration and cross/trans disciplinary approaches to finding solutions to the global and national societal, environmental and economical challenges. Potential areas for deeper R&I within Ireland, which can be stimulated by the Department's strategy include

- Advanced spatial planning to aligned climate, biodiversity, environmental and economic development opportunities towards a 2050 vision for carbon neutral Ireland. Currently the NDP, Local Government County Development Plans do not provide a comprehensive long term analysis considering the multiple competing development routes.
- The growth of the Bioeconomy and Circular Economy within Ireland is a clear area of focus and given the focus on these areas in recent years the future R&I strategy must reflect this key area of focus. TUS is embedded deeply with the Irish Bioeconomy Foundation (IBF) and have a clear vision that the Bioeconomy can deliver substantial environmental and economic benefits to the country and across Europe. Expertise across areas such as anaerobic digestion coupled microalgal technology; microalgal derived biofuels and biocircularity of plastics viz plastic hydrolysis and reutilisation including novel bio-packaging alternatives. We are also activity engaged in developing plans for a best-in-class environmental demonstrator site for food production and circularity in the peatlands as an integrated multi-trophic aquaculture system, at our site in Mount Lucas, Offaly (please see Appendix 1)
- The work of the Shannon Estuary Economic Taskforce (SEETF) had a significant focus on Off-Shore wind and the potential for Ireland to capture significant international competitive advantage through partnership with project developers and associated down stream actors. TUS strongly supports the submission from the SEETF to the strategy consultation and is working in partnership with UL, MIC and MTU in this regard.
- In the context of the UN SDGs TUS would suggest that the Department consider consultation with HEIs to build deeper capacity with the R&I community on impact assessments of their R&I activities against the SDGs, going beyond bibliometrics and giving value to wider engagement and collaboration activities.

2. What actions can the department take to identify future trends in the areas under our remit?

The Departments extensive engagement with EU policy makers is critical and should be continued and nurtured. Creating consultation forums with HEIs and their respective Research Institutes is critical and should be expanded. TUS is open to deepening this consultation. Looking beyond the EU and international trends is critical and TUS would recommend engagement with international experts in relevant areas as critical e.g. the US.

3. Are there specific thematic areas relevant to the Department's remit which you would like to see more research and innovation activity in? How can this be achieved?

In addition to the areas mentioned under Point 1 immediate thematic areas for consideration include

- Decarbonisation of process heat in industry. This presents a significant challenge, significantly beyond that of heating of buildings. Technologies are not readily available on the market to address decarbonisation of process heat above 140C which are economic attractive for industry to implement. R&I opportunities exist in different sectors to creating new technical solutions which will to



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maintain and grow national and FDI industrial base in Ireland. Establishing a Heat Pump Centre of Excellence (working in collaboration with District Heating CoE) could be a mechanism to drive industry relevant R&I activity

- Smart Energy Systems integration – delivering cost effective integrated solutions which meet end users needs. The current fragmented nature of systems which are on the market, in particular in the built environment sector, has resulted in non-optimal solutions being installed. Solutions which achieve true integration of different energy systems (generation, storage, heat supply) coupled with grid integration in terms of Time of Use and carbon benefit to the grid remain elusive. Clear focuses on such solutions could position Irish researchers and Irish companies in a leading positioning internationally.
- Decarbonised heating solutions including district heating have significant potential. While technical solutions are proven (and have proven market availability in Ireland) further development of models which integrate multiple technologies (not just waste heat from Data Centres). i.e. large scale water-source heat pumps & solid biomass as well as R&I into how to fund and deliver DH systems.

4. Have you views on the impact of disruptive technologies such as AI, Quantum and 6G as part of the digital transformation agenda and the implications of these technologies for the Department?

No comments at this time

5. How can the Department better communicate its research and innovation needs?

- Focus on communicating outcomes which are aligned with UN SDGs and align the R&I strategy with Irelands overall response to the SDGs.
- In addition to the investment made via the Department, and its Agencies, into R&I ensure that the wider benefits that are leveraged through this investment are communicated (jobs, additional EU support, spinouts etc) in a way which connects with society
- Consider how the outcomes/impact bring added value to society in particular and the contribution to the sustainability agenda in Ireland in particular
- Engage behavioural change and communication experts to advise and support researchers to package their work in formats which are aligned with different audiences (beyond the research community).

6. How can the Department work more effectively to source evidence from the national research and innovation community to support its work in policy development, policy implementation, and the uptake of new technologies?

Continued engagement and communication with HEIs is welcomed and invited. The current supports available and collaboration with various Agencies e.g. SEAI, EI National Contact Points etc is to a high quality but can be constantly developed, improved and enhanced. Collaboration with the Technological Universities on the R&I agenda can also be facilitated collectively through the Technological Higher Education Association (THEA).

DECC, working with the HEA, should fund researcher centres (and their researchers) on translating their work into policy development and implementation. In some cases the research community may lack the specific competence and expertise to align their outcomes to the policy environment.



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Further development of solutions open source data sets which can guide and support R&I. In particular data in relation to decarbonisation of heating is needed to accurately capture the impacts of Government initiatives and incentives.

7. How can the Department engage more effectively with all stakeholders in the national research and innovation system? If you are responding on behalf of an organisation, please state how the Department could more effectively engage with your organisation.

See comment regarding THEA under point 6. TUS, through its Vice President for Research and Innovation and its Research Institutes are always open to engage with the Department to help support specific areas of development.

8. Should the Department seek to grow its capacity to carry out in-house research? If yes, how can this be achieved?

TUS is of the opinion that the Department should continue to lead of policy development and implementation and that specific research should be based within those organisations which have a specific R&I remit. There is potential for confusion in the market if the Department were to develop capacity of its own in-house research. The R&I community in TUS, and other HEIs, is agile and adaptive to the needs of the market and there is a clear ecosystem in which world class research can be led within HEIs.

9. Are there examples internationally of Government strategies on research and innovation in climate, communications / digital, circular economy, cyber security, energy or environment that we should examine? If so, can you provide details?

We would encourage the Department to engage with the Upper Austrian Energy Agency who has been engaged in R&I activity with its Regional and Government Departments.

10. Are there any other matters you wish to raise in relation to the development of the research and innovation strategy?