

Symposium: Science-Policy Interfaces and the Environment

Developing Solutions and Informing Irish Policymakers across the Pillars of Climate, Water, and Sustainability

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This paper provides a brief overview of the Environmental Protection Agency (EPA) Research programme within the context of the science policy interface. The paper asserts that robust evidence is necessary to inform the development and implementation of policy in a meaningful and impactful way. The paper focuses on tools developed to improve the science policy interface by providing opportunities where EPA funded research can ‘Bridge the Gap’ between science and policy. Examples are presented under the three pillars of Climate, Water and Sustainability, to demonstrate how EPA funded research project outputs have informed policy. It is acknowledged from the outset that several factors influence the science policy interface and this short paper proposes some solutions to inform this broad and arena.

The Environmental Protection Agency (EPA) is an independent public body established in July 1993 under the Environmental Protection Agency Act, 1992¹. The EPA Act mandates the role of the EPA in funding research and co-ordinating environmental research in Ireland. As a statutory body the EPA is responsible for protecting the environment in Ireland. This is facilitated by regulation and policing activities that might otherwise cause pollution. The EPA research programme has evolved since 1994 and has extended its reach, scope and impact, in line with growing challenges and EPA commitments and obligations in the area of environmental protection.

Since 1994, the EPA has funded research that has increased national understanding of our environment, the challenges it faces and responses to these. It has also developed high quality research capacity and supported innovation that is internationally respected. EPA funded research provides essential scientific support for environmental policy development, implementation and broader decision making. The primary aims of the EPA Research Programme 2014-2020² is to identify environmental pressures, inform policy and develop solutions to address environmental challenges. The 2014-2020 research programme was informed and shaped by previous EPA Research Programmes: STRIVE and ERTDI which have established the EPA as a primary funder of environmental-related research in Ireland. The 2014-2020 strategy is underpinned by three pillars of Climate, Water and Sustainability with each pillar having several different related sub-themes. The 2014-2020 programme also includes a greater focus on partnerships, improved dissemination of research, support for open access/open data, enhanced stakeholder engagement and socio-economic and environmental interactions³. The 2014-2020 Research Strategy pillars of climate, water and sustainability are also aligned with the Sustainable Development Goals (SDGs). The SDGs recognise that ending poverty and other deprivations must go together with strategies that improve health and education, reduce inequality, and spur economic growth, all while tackling climate change and working to preserve our oceans and forests.⁴

¹ <http://www.irishstatutebook.ie/eli/1992/act/7/enacted/en/html>

² <https://www.epa.ie/pubs/reports/research/eparesearchstrategy2014-2020/eparesearchstrategy2014-2020.html>

³ <https://www.epa.ie/pubs/reports/research/eparesearchstrategy2014-2020/Indecon%20Interim%20Review%20of%20EPA%20Research%20Programme.pdf>

⁴ <https://sdgs.un.org/goals>

This paper proposes that an increased focus on the dissemination and communication of research outputs has enhanced the visibility, impact and reach and effectiveness of the research programme. The knowledge transferred from research outputs is evaluated, tailored and targeted to reach and engage more actively with relevant stakeholders.

The level of research funding for the EPA programme is small in the context of national research funding and average annual research spending over the period 2014-2018 amounted to €6.1m per year. Nonetheless, there is a unique element to EPA research in that it is directly linked to informing policy. EPA funded projects teams have cultivated strategic national and international linkages. The EPA research programme in the role of national delegate contact points for Horizon 2020 and other European Union funding initiatives endeavour to communicate and disseminate research outputs beyond Ireland. The new research framework⁵ will operate from the period of 2021 through to 2030.

The EPA research programme acts as the national research coordinator in environmental research in Ireland since 1994. The EPA research programme developed a forum for key stakeholders under the remit as National Coordinator of Environmental Research in Ireland, namely: Climate Research coordination group, Water Research Coordination Group and Sustainability Research Coordination Group, the objectives of which are:

- To facilitate, support and promote coordination, synergies and liaison between relevant cross-sectoral funding organisations, public and private, to reduce the fragmentation and/or duplication of environmental research in Ireland;
- To facilitate an exchange forum between research funders and key stakeholders, providing an interface for funding organisations of environmental research to facilitate the dissemination, sharing and uptake of relevant scientific outputs to policymakers and decision makers and the uptake of research outputs for commercialisation;
- To identify key research needs and emerging policy needs with the aim of informing the research strategy of Irish funding organisations of environmental research;
- To provide a platform for cross-sectoral research funding organisations to liaise and/or collaborate with European and international activities related to environmental research, such as JPIs, Technology Platforms, LIFE.

The broad and diverse research coordination groups membership provides a collaborative and supportive knowledge sharing forum for relevant public and private stakeholders in tackling shared challenges in a manner that adds value and prevents duplication of effort. The coordination groups facilitate networking and knowledge transfer opportunities for individuals tackling similar challenges that when addressed collectively can be more impactful. The coordination groups provide opportunities for all of participants to learn from each other and to identify opportunities to work more collaboratively together, co-design and add value to synergise across all environmental research initiatives.

The EPA Research Programme funded and published several guidelines and tools to assist with the preparation and on-going evaluation of project communications. The BRIDGE⁶ guidelines assist in focussing on the key messages of research projects to improve communication between policy makers, scientists and other stakeholders. It could be argued that policymakers, scientists and stakeholders can often find it difficult to connect and understand one another, in other words, each cohort speaking and communicating in a specific language most associated with the sector they are working within.

BRIDGE provides a suite of tools in the form of exercises, techniques and resources designed to be used by all those who wish to engage productively with each other in order to integrate environmental science into environmental policy. The aim is to foster communication between these groups so that environmental research and expertise can be used to make better environmental policy. Though based on research in biodiversity, climate change and water policy sectors, the BRIDGE tools can be applied to all environmental policy sectors. Stakeholders and actors within the research community and stakeholders beyond the research community may not share similar motivations and value conflicts can arise. BRIDGE findings suggest that when environmental policy is based on environmental expertise as evidence, it is generally more robust, relevant and has more positive impact and, in short, makes it more possible to integrate environmental science into environmental policy⁷. BRIDGE

⁵ [EPA Research 2030 | Environmental Protection Agency](#)

⁶ <http://www.epa.ie/researchandeducation/research/communicatingresearch/>

⁷ https://www.epa.ie/pubs/reports/research/spr/BRIDGE_Good_Practice_Guide.pdf

provides a navigation grid for policymakers and a navigation grid with tools for intermediaries, providing a suite of tools to aid translation and to bridge any communication gaps that may be encountered.

The actors operating in the science-policy interface include *inter alia* policy makers, scientists, those in-between such as non-governmental organisations (NGOs) and the media. These actor groups are not mutually exclusive and often overlap. Policymakers are those directly involved in policy decision making, such as politicians and government department officials. Scientists or researchers are those conducting environmental science research including university researchers, environmental consultancy or independent researchers, government and industry scientists as well as environmental non-governmental organisations (ENGOS). Intermediaries and knowledge brokers are those individuals or organisations who act as translators, conduits of information or facilitators of communication between scientists and policy makers. Intermediaries play a key role and may include those operating within science or policy environments and whose jobs involve these tasks, such as policy analysts or researchers, communication consultants, science journalists, research communication officers as well as those operating outside of the science or policy environments, such as NGOs, business representatives and community organisations⁸.

The BRIDGE navigation tools were co-produced in collaboration with stakeholders working in environmental policy sectors in Ireland. This co-designed and collaborative approach facilitated the development of a practical, relevant and useful application. It must be noted, however, that there are differing extents to which policy may be shaped by evidence and some policies may be more accurately described as being evidence-influenced or evidence-aware rather than evidence-based⁹.

Aqua TT was commissioned in 2014 by the EPA research programme to follow on from the BRIDGE The Gap report¹⁰. AquaTT developed a knowledge transfer methodology which has five key elements:

- ✓ identify the policy that you want to influence;
- ✓ profile the target users;
- ✓ develop that knowledge transfer; plan and carry out; and,
- ✓ measure.

This approach is similar to the Plan, Do, Check, Act (PDCA)¹¹, problem solving technique. The iterative design that underpins the PDCA model facilitates continuous improvement over time and in changing circumstances.

In 2018, Indecon Ltd conducted an independent review to examine the performance to date of the EPA's 2014-2020 Research Programme¹². The review critically evaluated the effectiveness of the programme's key messages in linking knowledge with action. It could be argued that achieving sustainability transitions will require diverse new knowledge, drawing on multiple disciplines and types of knowledge production. This includes evidence about the systems driving environmental pressures, pathways to sustainability, promising initiatives, and barriers to change. This independent qualitative and quantitative review examined the performance of the research programme. The research methods deployed by Indecon included stakeholder interviews, written submissions, surveys of researchers, a survey of relevant EPA staff, a survey of non-successful applicants to the EPA research call, analysis of the quantified data to examine selected EPA case studies, and workshops.

Figure 1 presents a graph that shows results to one question from a survey of EPA funded researchers concerning the researchers' opinion on the impact of EPA funded research in its goal to informing policy. The graph indicates that over 80% of the respondents believe that EPA research funded projects do have an impact for informing policy.

⁸ http://www.epa.ie/pubs/reports/research/spr/131_BRIDGE_Toolkit.pdf

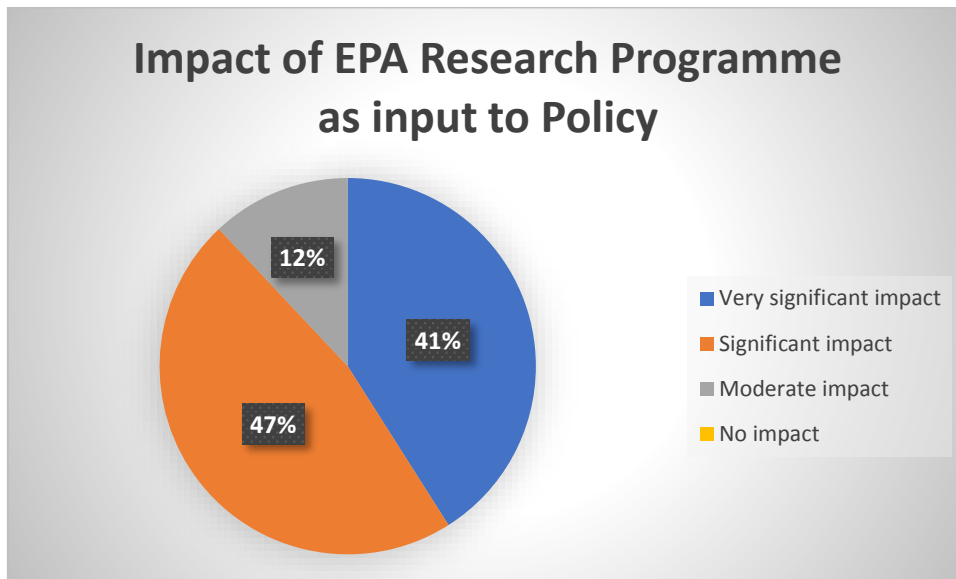
⁹ https://www.epa.ie/pubs/reports/research/spr/BRIDGE_Good_Practice_Guide.pdf

¹⁰ <http://www.epa.ie/researchandeducation/research/researchpublications/researchreports/research284a.html>

¹¹ <https://en.wikipedia.org/wiki/PDCA>

¹² <https://www.epa.ie/pubs/reports/research/eparesearchstrategy2014-2020/Indecon%20Interim%20Review%20of%20EPA%20Research%20Programme.pdf>

Figure 1 - Impact of EPA Research Programme as input to Policy.



The researchers were asked a question to identify how many of them participated in workshops or conferences to communicate and disseminate their research. 79% surveyed said they did. The researchers were also asked how many of them had met with policymakers and public bodies. 62% of the researchers indicated yes and 30% of respondents indicated that they had participated in policy workshops. Regarding knowledge transfer, dissemination and communication of the research findings 50% indicated that they submitted the findings from their EPA funded research to academic journal papers, 47% said they submitted to national media and 68% said that they developed a social media presence.

The Indecon review findings concluded:

- The EPA Research Programme has led to several impacts including its impact on quality of environmental research, dissemination of research and policy inputs and capacity development of environmental research.
- Dissemination of research and input to policy is a key objective of the EPA Research Programme and the Indecon analysis shows that funded researchers are cognisant of this.
- The Indecon survey indicates that 62% of researchers have already met with policymakers to discuss their research with remaining researchers indicating they intend to do so before they complete their research.
- The review also highlights that EPA funded research is likely to impact on policy in various ways. The survey analysis indicates that most funded research projects provided new evidence or new analytical tools to inform policy.

The findings from the Indecon review highlighted opportunities for improvement to have a greater impact.

Steering Committee members who participate on EPA funded research projects play a key role and are identified by EPA Research Programme project managers prior to commencement of all research projects. A steering group is formed to: provide advice to the research team and EPA on the overall direction and approach of the project and provide an external view of the research. The steering group will also advise on the contents and structure of the final report. Any proposed changes to the initial scope of the project (either proposed by the project team or EPA or Steering Committee) are discussed with EPA, Steering Committee and Project Team and approved by EPA following review & recommendations from the Steering Committee. This comprehensive approach facilitates a more robust and credible report, reviewed and critiqued by individuals with expertise in the subject area of the research.

In more recent years key Departmental staff are invited to participate on Steering Committees to bridge the gap from the research outputs for the policy development and policy implementation process. Allied to this is a more pro-active and targeted approach to maximise all opportunities for the research to be presented to the policymakers

and thus ideally inform policy. The timing of the Annual Research call is also aligned to ensure that the research outputs can inform relevant policy in a timely manner. Research outputs include a Final Report publication and it is acknowledged that the publication of the report in isolation may not reach the desired audience and have the desired impact. Meaningful impact requires impactful knowledge transfer and engagement with key decision makers and relevant stakeholders. The importance of communication and dissemination is also greatly enhanced using a combination of traditional and new social media channels. Research outputs include policy briefs and infographics with tailored and targeted messages informed by research findings.

Furthermore, since 2014 the EPA in acknowledgement of the importance of communication and dissemination all EPA funded research projects receive a 5% communication and dissemination budget which is ring-fenced when the grant is awarded. The communication budget provides for 3% of the entire budget to be used for communication/dissemination during the lifetime of the project and 2% is ring-fenced for post completion communication/dissemination. The 2% post completion budget is important to ensure that the research enhance the visibility of the research findings in a targeted and tailored fashion. This approach can also facilitate more meaningful stakeholder engagement and networking opportunities for researchers to leverage further research funding both nationally and internationally. Enhanced visibility can also provide opportunities to enhance the career pathways and reputation of academics and Ireland as a hub in the development of a strong evidence base and example of ‘best practice’ in certain disciplines.

Recommendations from the intercom review suggested implementing mechanisms that could to inform and facilitate short-term policy decisions and needs. A current example includes the fast track to policy approach that was adopted to find solutions to address the challenges associated with the COVID 19 pandemic. This approach depends upon the need to be nimble and adaptable and for collaboration enough to be able to do specific research right in the moment.

Indecon also advised that there is a need to further increase the investment in the promotion and dissemination of the research findings to facilitate more impactful knowledge transfer and greater engagement with EU programmes on research and innovation.

This paper outlines three examples drawn from research outputs under the pillars of Climate, Water and Sustainability to demonstrate how findings from EPA funded research have informed policy. Within the Climate pillar, it was identified that there was a need for a ‘One Stop’ web-based resource for climate and adaptation information for Ireland to support and build national capacity for Climate Change adaptation. The platform as an Irish climate information platform was developed in collaboration with University College Cork, see EPA final reports 135¹³, 222¹⁴, and 258¹⁵. The final output after phase three of this research is climateireland.ie and as envisaged it provides a ‘One Stop’ web based resource for all information about climate in Ireland.

Since 2007, the EPA has delivered a comprehensive Climate Lecture Series which is aligned with and responds to Action 159 of the Climate Action Plan (2019) to: Enhance the effectiveness of climate-related communications, network building and deliberative capacity within and through the National Dialogue on Climate Action (NDCA).

The EPA Water pillar ‘Pathways’ Research: *Contaminant Movement and Attenuation along Pathways from the Land Surface to Aquatic Receptors: the PATHWAYS Project*¹⁶ investigated pathways of contaminant transport in Irish catchments and developed a national suite of Catchment Management Support Tools (CMSTs). This research informed the Environmental Protection Agency's Water Framework Directive characterization approach.

An environmental sensitivity mapping (ESM) web tool was developed under the Sustainability pillar by a fellowship funded to University College Dublin (UCD). The objective of the research was to develop a web tool to enhance the consistency and transparency and Strategic Environmental Assessment (SEA)¹⁷. This low-cost fellowship has had a huge impact and reach within the discipline of planning.

The three examples listed enabled the EPA research programme to learn key messages about the important and critical role of research in the strategic policy interface and the ongoing role of research to fill the knowledge gaps to inform policy development and implementation. The ‘Bridge the Gap’ resources created tailored and targeted

¹³ <https://www.epa.ie/pubs/reports/research/climate/report-135-for-web.pdf>

¹⁴ [https://www.epa.ie/researchandeducation/research/researchpublications/researchreports/EPA%20RR%20222%202013-CCRP-MS.11%20\(O'Dwyer\)%20final%20web.pdf](https://www.epa.ie/researchandeducation/research/researchpublications/researchreports/EPA%20RR%20222%202013-CCRP-MS.11%20(O'Dwyer)%20final%20web.pdf)

¹⁵ https://www.epa.ie/researchandeducation/research/researchpublications/researchreports/Research_Report_258.pdf

¹⁶ <https://www.epa.ie/researchandeducation/research/researchpublications/researchreports/researchreport165.html>

¹⁷ <https://ec.europa.eu/environment/eia/sea-legalcontext.htm>

toolkits to speak in common vocabularies to broad and diverse stakeholders in an innovative, engaging, empowering and practical manner. The Bridge the Gap toolkits are important now in the context of the need for more policy coherence, collaboration and co-design to address pressing environmental challenges.

The new EPA research 10-year framework reflects the importance attributed to robust excellent science to inform policy in a meaningful and impactful way. Recognising the scale and pace of changing circumstances and emerging new issues of concern, the new research framework is developed to be nimble, adaptable and agile. On a three-year cycle, the EPA will carry out a detailed consultation to identify key research areas and actions, including emerging challenges and knowledge requirements, to inform the direction of the subsequent three-year cycle of EPA research awards. The identified priorities will seek to address policy and research needs on various timescales (short, medium and long-term), using tailored project scales (spanning from fast-track to policy supporting assessments to large-scale multidisciplinary and complex projects). Furthermore, a key feature of the new framework also emphasises the need enhance the visibility of the research outputs through more effective knowledge transfer¹⁸.

In conclusion, this paper asserts that good science-policy communication consists of two-way positive communication between scientists, policy makers and intermediaries. While tools allowing one-way communication can form part of a successful science-policy strategy, on their own they are not enough. Science-policy communication is a network activity and investing in developing working relationships, whether formal or informal, between the various actors and interested parties, is an integral part of facilitating productive science-policy communication. Such relationships form the basis of fostering mutual understanding between the professional groups involved¹⁹.

¹⁸ EPA Research 2030 | Environmental Protection Agency

¹⁹ http://www.epa.ie/pubs/reports/research/spr/131_BRIDGE_Toolkit.pdf