

Institutional and Stakeholder Issues in Parliamentary Technology Assessment: A Case Study

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Abstract: Society looks to science and technology when confronted with challenges such as terrorism, climate change, ageing society, and sustainable consumption. However, not all change is perceived by all stakeholders to be positive. The public sector has an increasing role in influencing the application of modern technologies: policy makers are confronted with technological challenges with far-reaching and often unpredictable impacts: stem cell research, fracking, eCommerce and so on all provide striking examples of the need for elected representatives to have access to unbiased scientific knowledge to underpin evidence-based decision making. This paper reports preliminary results from an on-going research program related to the issues of Parliamentary Technology Assessment (PTA) and citizen participation in related processes. Findings so far - presented in the form of a case study - relate to the institutional structure enabling PTA; while current and future phases of the program address ICT related technology assessment on the one hand and use of ICT and especially e-Government solutions in improving citizen access to and participation in PTA. The case study of Ireland addresses the implementation of a formal PTA capability and it investigates the role played by existing agencies and the gaps that remain to be filled – potentially through the utilization of e-government solutions.

1 Introduction

Whilst there is a bias towards the view that technological progress leads to societal gains, the accumulated evidence is that the implementation of science-driven changes in our modern society requires far greater levels of scrutiny. Technological evolution is not without controversy and the role of science and technology – including Information and Communication Technology (ICT) – in instigating change is not without questioning its impact. Politics, science, and society need to be connected in ways that allow policy makers to reach well informed decisions about questions related to advances of science, technology, and innovation (STI).

While there appears to be no widely accepted definition of electronic government [Yi07] (eGov), it may be considered as the provision of governmental services via information and communication technologies and thus discussed from the perspective of citizens, businesses and administrators as e-service users. However, eGov may be placed into the

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wider context of transformational government (tGov) [KC07] where broader issues concerning processes and participation in the democratic and decision making setup [MS00] should be discussed first before addressing issues of utilizing technology. Research should also address the institutional setting into which new technologies are to be introduced. Changes in the processes and institutions of public administration are often initiated with the intent to deliver improved public service and to achieve measurable societal improvements. Science, technology and innovation related policy decisions are one area where transforming governmental institutions and processes has the potential to contribute to the delivery of considerable benefits.

The PACITA (Parliaments and Civil Society in Technology Assessment) EU FP7 project² was initiated with the aim of investigating the success of (P)TA in a large set of European countries and to understand the impact of various institutional arrangements. This paper considers the case study of Ireland with regards to the implementation of a formal PTA capability. It identifies the role played by existing agencies and the gaps that remain to be filled in the current landscape. While it does not directly focus on specific eGov issues, it lays down the foundation for broader discussion of citizen participation by investigating the wider framework of relevant public institutions that drive ICT related policies and themselves require better ICT support.

2 Technology Assessment and Parliamentary Technology Assessment

Outcomes of innovation such as new technologies, methods and tools are highly regarded by our modern society. At the same time, policy makers face many science related decisions that affect the social, moral and ecological fabric of society both today and into the future. Such decisions ought to be guided by well-founded warrants and backings often relying on scientific arguments and analysis of data utilizing advanced technologies and scientific results. It is important that these debates are executed in an environment that promotes transparency and evidence-based decision making. As the number of interest groups grows, policy makers urgently need unbiased and balanced advice on the implications of scientific and technological adoption. Responsible and innovative policies on science and technology must rest on well informed rationales and structures based on understanding how science, technology, and society interact.

Technology assessment is considered to be “*a scientific, interactive and communicative process, which aims to contribute to the formation of public and political opinion on societal aspects of science and technology*” [Bü04, p. 14]. One area of debate is the role of the state institutions – e.g. parliaments and governments – in contributing to or controlling technological advances and their impact [Va97]. This should be considered in relation to the role of citizens (the public or society) as well as the media [JD95; An95]. Discourses on the governance of innovation point out the relevance of technology assessment [Po80] at the local, national and global level. There is a range of institutional and procedural arrangements for performing technology assessment [BG97] and there is evidence that these have an impact on the outcome of the process where

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opinions about the societal aspects of science and technology are formed [SC04]. It is not surprising that cultural, historical and political differences influence the success of specific solutions in any given context [DL04; Gr12]. Furthermore, the content of Parliamentary TA debates often relates to the impact of ICT or its sustainability. However, there is little evidence of research focusing on the use of ICT in PTA.

Parliamentary technological assessment is a support activity directed at policy-oriented decision-making processes within the parliament. It may focus on diverse themes such as energy, health, aging, and so on. PTA may involve experts and various stakeholders with the primary purpose of informing decision makers within the parliament. A secondary aim can be, however, information dissemination to citizens. Parliamentary-focused TA institutions are generally national entities, although they may operate at other levels. In all cases the goal is to provide analysis and impartial advice to policy makers about issues related to the interplay of science and society. In this regard, the source of their funding is important as it may impinge on this impartiality. However, a wider view of PTA [GE12] may position it as a 'knowledge broker' between the four spheres of parliament, government, science and society. Consequently, clients of PTA may in this case involve the general public. In this capacity, one would consider the role media and journalists play in disseminating information, raising issues and forming opinions. In addition, with the consideration of government and executive powers, other areas such as economy and innovation must also be considered. Such modelling of PTA offers a more open and wider way of discussing its role and institutions. Analysing relationships among these spheres may be conducted at three different levels, namely the institutional, the organisational and the project level. This research focuses primarily on institutions.

[En11] differentiates three typical arrangements in the institutionalization of PTA when supporting political decision-making on STI policy. The *Parliamentary Committee* model sees a dedicated body internal to the parliament leading PTA. This governance approach is closely linked to the internal functioning of the parliament. In the *Parliamentary Office* model there is a support unit either internal or closely linked to the parliament (that is the office may be located inside parliamentary structures or is contracted out to an external research organisation) leading PTA. Under the *Independent Institutes* model the TA organisation operates at a distance from parliament although its main client is still the parliament. In this arrangement, the PTA unit often reaches a broader set of audiences and its objectives go beyond informing the parliament. Other target groups may include media, the general public, or local government. However, these models do not fully address the definition of TA, as the role and contribution of TA goes beyond the TA institution itself. Still, not all countries offer a formal, institutional solution to PTA. The key issue is to make sure that a fair and reliable assessment of technology is available. New PTA organisations do not come out of the blue. It is possible to recognize and make explicit a so-called 'opportunity structure' for PTA [GE12] for countries that are yet to establish a formal TA structure. The research reported here focuses on the case study of Ireland.

3 Research Objectives and Methodological Considerations

While the requirement to implement institutionalized forms of PTA is clearly an important part of any national PTA landscape, there are considerable variations in the sources of expertise used and the relationship to parliament inherent in the different PTA institutions across Europe. Assuming that all modern democracies should have a PTA function, especially those who have tGovernment ambitions, we are left with the critical issues of trying to decipher the contingencies that apply to the design of the “best fit” PTA approach for a given national setting. We are particularly interested in how these contingencies play out in the case of Ireland, currently a non-PTA country with nonetheless, a strong focus on science and technology: “*What institutional arrangement would offer an effective and efficient support for implementing PTA in Ireland?*”

To answer this question, a case study based approach was selected utilizing an embedded case study construct [Yi03] where the main unit of analysis is the country and an embedded *representative* case of technology assessment is used as illustration of institutional issues and stakeholder positions. While the focus of the overall PACITA project is assessment at the EU level this part looks at an individual nation within that context. Data collection at the Irish level utilized official documents, public records, newspaper articles and interviews with key personnel. Published documents were identified in a systematic review of existing sources. Interviews with key decision makers following a positional method of sampling as recommended by [Kn94] “*where people and organisations occupying the key roles in the system studied are interviewed*” (pp. 280-281), followed by some further reputational and snow-ball sampling. This gave rise to a total of 30 interviews and two focus groups with interested parties over a period of 18 months. The embedded case study of fracking was selected opportunistically as one which took place within the timeframe of the study and offered a suitably challenging level of controversy: a high intensity selection in the words of [Pa90].

4 The Case of PTA in Ireland

4.1 Historical Context and Institutional Setting

Ireland is a non-PTA country: the country lacks a formal structure to support parliament in STI related issues. Today science plays a relatively weak (by European standards) role in the everyday agendas of Irish citizens and politicians [Tr11]. Deputies are in general not well informed on issues of science and technology and often have a limited focus on national issues unless such issues have some impact on their own constituency. But deputies do not generally vote in accordance with the wishes of their constituents and instead follow the instructions of their political parties. In return political parties carefully formulate policy that is likely to satisfy its electoral base. The political culture of the country is ‘local’ and based on ‘clientelism’ [DSO10]. Despite low levels of participation in Irish democracy and the absence of a formal mechanism for stakeholder groups to provide input into decision making, this does not mean that special interest

groups and members of the general public do not try to influence the Government's and individual Minister's positions before proposals are presented to the lower house.

Forfás is the national Board responsible for providing policy advice to Government on enterprise, trade, science, technology and innovation in Ireland. The Board often fulfils its mandate by delegating responsibility to associated agencies such as Enterprise Ireland (EI) for the promotion of indigenous industry, the Industrial Development Authority (IDA) for the attraction of inward investment, and Science Foundation Ireland (SFI) for supporting scientific and engineering research and its infrastructure. The Office of the Chief Scientific Advisor (CSA) was established in 2004 to provide independent expert advice on any aspect of science as requested by the Government – however, in August 2011 the CSA retired and it is unclear whether this position will be refilled. The Science Advisory Council (Advisory Council for Science, Technology and Innovation - ACSTI) provides policy advice to the Irish Government on medium and long term science, technology and innovation issues and contributes towards the development and implementation of a coherent and effective national STI strategy. Each of these entities has to some extent been active in performing TA-like activities. In addition, several government departments have in-house scientific expertise in the form of scientific officers or medical officers or research co-ordinators. Some government departments utilise on an ad hoc basis scientific advisory groups that include external experts in order to deal with particular circumstances.

The country has seen a strong increase in the number of groups formed to influence policy. Unlike sectional groups which are more permanent and expend much of their resources on maintaining direct links to policy makers, cause-centred groups are generally ad hoc and aim to influence policy making through increasing public awareness of a pressing issue. However, within the larger population outputs from science are having little resonance, except where they bear on pressing topical issues in, e.g. health, energy or environment [Tr11]. There are serious concerns related to the efficiency and effectiveness of the current setting and there appears to be a clear need to find a better way forward.

4.2 Issues with the Current PTA Process: The case of Fracking

In order to review typical stakeholders and to demonstrate their access to the TA process, a demonstrative case study of hydraulic fracturing (aka fracking) in Ireland in recent years is presented³.

The Natural Resource: It has been reported that there is an estimated total of 4.4 trillion cubic feet of gas present in the island of Ireland, with the amount split equally between the North and the Republic of Ireland. Tamboran Resources reported that a gas field on the Fermanagh/Leitrim border alone “*could deliver security of energy supply in Ireland for the next 40 years providing 600 jobs with up to 2,400 indirect jobs*”.

The Extraction Technology: Fracking is a technique involving the pressurised injecting

³ Quotes are from the Irish Times and The Journal online newspapers as well as from [Tr11].

of large volumes of water, chemicals and sand into rock formations in order to fracture them and extract previously inaccessible fossil fuel deposits, such as gas from shale.

The Debate: Despite the promises, fracking is causing concern due to its potential environmental and health side effects. The debate in Ireland is largely centred on the conflicting desires to maintain a rural way of life based on a strong relationship with the environment and at the same time a desire to ensure economic development that brings increased employment and prosperity.

The Position of the Government: By 2011 the Department for Energy had licensed three companies to explore for onshore gas in one area, which straddles 8,000 square kilometres across 12 counties. However, in response to mounting pressure from lobby groups, late 2011 the Minister for Energy commissioned the Irish Environmental Protection Agency (EPA) to research the ‘environmental dimension’ of fracking. In response to the report (see below under ‘Science’) the Minister stated that no hydraulic fracturing for gas would take place in Ireland pending further “*detailed scientific analysis and advice*”.

What happened in the Parliament: To date, the parliament has yet to enter the fray and no specific discussion on fracking has taken place.

Actions by Local Governments: Some local authorities, namely councils in the counties of Clare, Leitrim, Roscommon, Donegal and Sligo, have seized the initiative in 2012 and taken steps to prevent fracking in their own areas by making provisions in their development plans to prevent fracking, regardless of decisions made by the Minister.

The Scientific Report: In Oct 2011 the EPA commissioned experts at the University of Aberdeen (UK) to undertake a study. The resulting report warns that risks to water are an “*important concern*”, but also points out that “*all scientifically documented cases of ground water contamination ... are related to poor well casings and their cements, or from leakages of fluid at the surface, rather than from the fracking process itself*”. The study makes clear that EU Directives on Mining Waste and Water Protection place significant constraints on shale gas extraction activities in Europe.

The Issue in the Media: The role of the media in communicating issues, such as the fracking controversy, has been central in both instigating and forming the debates at both a national and local level. But the media in Ireland has limited capacity for reporting on these issues as most of them has no science specialist correspondent. While the media does cover science and science-related topics reasonably frequently, the material is drawn to a large extent from news agencies and syndicated services and more often than not relates to health issues. What is also noticeable is that local media often takes a more hard line approach to the issues – often reflecting or perhaps influencing local opposition to proposed developments.

Reactions from Civil Society: To-date resistance to fracking in Ireland has largely been at a local level. Viewings of a 2010 US documentary film telling the stories of communities impacted by fracking have heightened the fears of many citizens. In September 2012 there was a ‘Global Frackdown Day of Action’ that attracted a range of

speakers, including deputies, local councillors, and farmers. In August 2012 a coalition of twenty seven environmental groups called on the Government to “*put a stop to all fracking activity*” in Ireland. The coalition spokesman said that the environment and long-term development of rural Ireland was “*at risk from the secrecy surrounding the polluting processes involved*”. The called for a study performed by either a national or European regulatory body to include “*a full cost-benefit analysis of the socioeconomic and environmental impacts ... with full public participation of stakeholders*”. Every anti fracking group in the country refuted the conclusion of the EPA study claiming that it did not take into account the geology of the region and the intended depth of the wells. Throughout the decades of state-sponsored, multinational-led development and infrastructural expansion in Ireland, the voice of the grassroots environmentalist has always been raised. Local communities mobilised themselves and retained a rural perspective in pitching the rural way of life against modernisation. These campaigns are increasingly being fought using a powerful mix of local meetings, local print media and the wider social media. In some case communities and individuals have responded to national policies by putting forward planning and legal challenges.

4.3 How the Institutional Deficit may be Amended in Ireland

As may be concluded from the discussion above the primary objectives of the institutionalization of PTA should be to provide impartial advice built on Irish and international sources of knowledge, as well as insights from various stakeholder groups interested in the topic under consideration. It should offer evidence-based analysis to both deputies but also other stakeholders, including citizens. At the same time the solution has to be politically feasible and financially sustainable while the entity must also be separate from agencies charged with implementing policy. Thus the role would appear to be best filled by a trusted and impartial third party entity that could utilise participatory approaches if and when required. The TA role may be filled by an existing entity, such as the Advisory Council for Science, Technology, and Innovation (ACSTI) or the Office of the Chief Scientific Advisor (CSA) and could use the pro bono work of scientists, researchers, and industrialists. This is essentially an independent institute model in terms of the categorization by [En11] discussed above. Establishing PTA in this manner may not require a large financial investment.

5 Future Research: What Role ICT Should and May Play in PTA

One consideration this research intends to investigate in its next phase is whether ICT can help in closing the gap between public needs and institutional processes, and if yes, how. ICT based and eGovernment solutions may support the achievement of the three main goals of TA: it may make information available and more accessible to the general public, it may contribute to the process being more transparent, it can enable people to have access to the process, it could help shaping people’s opinion and attitudes and, ultimately, it may be utilized in taking actions or mobilizing interested parties. Overall, eGov in (P)TA should be able to promote more active participation. One thing is certain, however: in order to be successful, Parliamentary Technology Assessment must enable

building trust between stakeholders. EGov solutions then can strengthen the institutional foundation of PTA by promoting public engagement in science and technology.

References

- [An95] Andersen, I.E. (ed.): Feasibility Study in New Awareness Initiatives. Danish Board of Technology, Copenhagen, 1995.
- [BG97] Bimber, B.; Guston, D.H.: Technology Assessment: The end of OTA. *Technological Forecasting & Social Change* 54 (2&3), 1997; pp. 125-130.
- [Bü04] Bütschi, D.; Carius, R.; Decker, M.; Gram, S.; Grunwald, A.; Machleidt, P.; Steyaert, S.; van Est, R.: The practice of TA; Science, interaction and communication. In (Decker, M., Ladikas, M. (eds.)): *Bridges between science, society and policy: Technology assessment - Methods and impacts*. Springer, Berlin, New York, 2004; pp. 13-55.
- [DL04] Decker, M.; Ladikas, M. (eds.): *Bridges between science, society and policy: Technology assessment - Methods and impacts*. Springer, Berlin, New York, 2004.
- [DSO11] Delany, S.; Sinnott, R.; O'Reilly, N.: The Extent of Clientelism in Irish Politics: Evidence from Classifying Dáil Questions on a Local-National Dimension. AICS: Proceedings of 21st Irish Conference on AI and Cognitive Science. AICS, Dublin, 2010.
- [En11] Enzing, C.; Deuten, J.; Rijnders-Nagle, M.; van Til, J.: Technology across borders - Exploring perspectives for pan-European Parliamentary Technology Assessment. European Parliament, STOA, Brussels and Technopolis Group, The Netherlands, 2011.
- [GE12] Ganzevles, J.; van Est, R. (eds.): PACITA: Collaborative project on mobilisation and mutual learning actions in European Parliamentary Technology Assessment - Deliverable 2.2, TA Practices in Europe. Rathenau Instituut, The Netherlands, 2012.
- [Gr12] Griessler, E.: One size fits all? On the institutionalization of participatory technology assessment and its interconnection with national ways of policy-making: the cases of Switzerland and Austria. *Poiesis & Praxis* 9, 2012; pp. 61-80.
- [JD95] Joss, S.; Durant, J.: Public participation in science: The role of consensus conferences in Europe. Science Museum, Peterborough, UK, 1995.
- [KC07] King, S.; Cotterill, S.: Transformational government? The role of information technology in delivering citizen-centric local public services. *Local Gov. Studies* 33, 2007; 333-354.
- [Kn94] Knoke, D.: Networks of elite structure and decision making. In (Wasserman, S., Galaskiewicz, J. (eds.)): *Advances in Social Network Analysis: Research in the Social and Behavioral sciences*. Cambridge Univ. Press, Cambridge, UK, 1994; pp. 274-294.
- [MS00] Means, G.; Schneider, D.: *Meta-capitalism: The e-business revolution and the design of 21st century companies and markets*. New York: John Wiley & Sons Inc.; 2000.
- [Pa90] Patton, M.Q.: *Qualitative research and evaluation methods*. Sage, Thousand Oaks, 1990.
- [Po80] Porter, A.L.; Rossini, F.A.; Carpenter, S.R.; Roper, A.; Larson, R.W.; Tiller, J.S.: *Guidebook for technology assessment and impact analysis*. Elsevier, New York; 1980.
- [SC04] Sanz-Menéndez, L.; Cruz-Castro, L.: Shaping the impact: the institutional context of parliamentary technology assessment. In (Decker, M., Ladikas, M. (eds.)): *Bridges between science, society and policy: Technology assessment - methods and impacts*. Springer, Berlin, 2004; pp. 101-128.
- [Tr11] Trench, B.: *Monitoring Policy and Research Activities on Science in Society in Europe (MASIS): National Report, Ireland*. DG Research, COWI, Denmark, 2011.
- [Va97] Van Eijndhoven, J.: Technology assessment: Product or process? *Technological Forecasting and Social Change* 54 (2&3), 1997; pp. 269-286.
- [Yi03] Yin, R.K.: *Case study research. Design and methods*. Sage, Thousand Oaks, CA, 2003.
- [Yi07] Yildiz, M.: E-Government research: Reviewing the literature, limitations, and ways forward. *Government Information Quarterly* 24(3), 2007; pp. 646-665.