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Title: **Knowledge Brokerage at the Science-Policy Interface: -case studies of tools and policy impact assessment**

Abstract
The swift rise of policy appraisal in recent years – to the status of legal requirement in many countries - has been mirrored by development of many support tools such as environmental models. However, there is a widely-observed gap between extensive supply of such tools, and patchy demand for them; their use is influenced by many technical, procedural, conceptual and political factors. How and to what extent can the relationship between appraisal tools and policy-making be developed, particularly the type of expertise required for addressing complex policy problems such as climate change? This paper addresses this question within the wider concept of science-policy interaction as a fluid and porous interface, and also as a shared, multi-actor process of addressing policy problems. The paper employs a knowledge-brokerage (KB) approach, where the linear model of 'speaking truth to power' is challenged by a more reflexive approach to the interaction. To do this, and to reflect the many context-specific forms of the science-policy interface, we focus on case studies of six different policy problems at different decision making levels and jurisdictions. We assess the most appropriate KB strategy in each case, and critically evaluate the KB approach – how it worked, what factors influenced it and how effective it was. Using the preliminary case study results, we describe a preliminary typology for different 'modes' of SPI operation, and discuss how institutional setting affects the process, governance and success of knowledge brokerage. Work is ongoing, but initial results show that the 'test case' concept acts as a flexible conceptual and practical guidance for researchers in science policy interactions in policy appraisal processes, and can help facilitate the relationship between scientists and policy makers. The approach yields conceptual learning about the science-policy interface, and reveals different actors' conceptual models of knowledge production and application.

1. Introduction

We are living in a world of information. As Simon noted already in 1957 people have become information satisfiers rather than optimizers (Simon 1957 in Michaels 2009). At the same time our society and our relationship to global ecosystems have become more and more complex leading to wide ranging and deep instabilities in the nature. In order to make efficient decisions, justifiable and accurate scientific information is needed. Knowledge production and utilization are challenging due to diffused nature of environmental governance, which is increasingly distributed among institutions and scales (Owens 2012).

In this paper we will discuss the processes of production, distribution and utilization knowledge in environmental governance, to be precise in policy impact assessment. The objectives of this paper are:
1) To emphasise the role of policy appraisal tools
2) To introduce and discuss knowledge brokerage as an approach to improve the science-policy interface and the use of tools
3) To illustrate the role of different contexts in science-policy interface

2. Relationship between policy appraisal, appraisal tools and policymaking

By policy impact assessment or policy appraisal we mean an *en ante* procedure of predicting and evaluating the potential impacts of policy options. Policy appraisal can feed the policy process several ways, e.g. by providing additional evidence for policymakers or enhancing conceptual learning among different actors. In this paper we focus solely on the policy level appraisal, although the process follows generic steps as in EIA and SEA (Adelle and Weiland 2012). The concept and use of policy appraisal has spread rapidly around the world in the past twenty years (Radaelli 2004). In practice it functions in a variety of different ways in different countries and even in different policy fields within one jurisdiction. Furthermore, the purpose, focus, methods and implementation level of policy appraisal varies across countries (Radaelli 2005; Adelle and Weiland 2012).

Appraisal tools are models and methods, which can provide either instrumental, quantitative data or more deliberative, quantitative information for the policy appraisal and the policy process. Nilsson et al. (2008):338, quoting Jenkins-Smith (1990) defines tools as: "techniques developed in the fields of economics, mathematics, statistics, operations research and system dynamics… [that seek] to provide decision-makers with advice on the formulation of public policy". This definition can be broadened by tool categorisation (e.g. de Ridder et al. 2007), which includes simple tools, physical assessment tools, monetary assessment tools, modeling tools, scenario analysis, multi-criteria analysis and stakeholder analysis tools.

In spite of the fact that the amount of appraisal tools has grown rapidly in a decade, there is a wide gap between tools available and tools actually used (Nilsson et al. 2008). Research has identified several reasons for this. For example Turnpenny et al. (2008) have identified possible constraints for the integration of policy appraisal. These elements can partly explain the non-use of the appraisal tools. The constraints can be divided into three levels:
1) *microlevel:* resources (time, money and staff including levels and types of expertise, training, background and skills of policy officials and the suppliers and users of the assessment)

2) *mesolevel:* organizational norms and culture, formal and informal decision rules, coordination procedures and political leadership
3) *macrolevel:* network of stakeholders, administrative/legal context

Other possible explanations for poor tool use include closed science-policy interface and loose framing of policy problem at issue (Runhaar and van Nieuwaal 2010), separateness of IA and policy process (Hertin et al. 2009), lack of data, politized tool selection in form of neglecting tools with unsure/ unwanted results (Nilsson et al. 2008), desk officers role not to use tools (Nilsson et al. 2008), separation between analytical tool use and political process (Nilsson et al. 2008), trust (Nilsson 2006), failure of research to penetrate decision-making process (van Overveld et al. 2010), scientific uncertainties mixed with ideological differences (van Overveld et al. 2010) and different views of tool developers and users (Nilsson et al. 2008).

Key questions arising are therefore: how do developers of tools respond to such challenges? What strategies might be employed to address these perceived gaps? How can the relationship between tools and policy-making in the context of policy appraisal be developed? We argue in this paper that an approach based on building relationships between researchers and policy actors offers a potentially fruitful way forward, both for practical results and conceptually.

3. Knowledge brokerage approach in science-policy interface

To address the important issue of tools and policymaking, we examine science-policy interface and employ Knowledge Brokerage approach. Science-policy interfaces (SPI) are "social processes which encompass relations between scientists and other actors in the policy process, and which allow for exchanges, co-evolution, and joint construction of knowledge with the aim of enriching decision-making" (van den Hove 2007). In our work we concentrate on SPI occurring in the policy appraisal process.

Knowledge Brokerage (KB), for one, is an approach to analyzing, guiding and ultimately improving the SPI (Gieryn 1995; Michaels 2009), or as Cash et al. (2007) more generally describes 'boundaries between knowledge and action'. KB challenges the positivist view on linear transfer of scientific knowledge into policy making (by the idea that the boundary between science and policy is socially constructed and thus dynamic and shifting (Gieryn 1995). Thus, instead of instrumental learning (i.e. "knowledge directly informs concrete decisions by providing specific information on the design of politics", Hertin et al. 2009) of individual users KB aims at long-term conceptual learning (i.e. "knowledge "enlightens" policy makers by slowly feeding new information, ideas and perspectives into the policy system", Hertin et al. 2009). The process is promoted by the knowledge broker, a mediator or boundary worker, who utilizes different techniques in order to improve the shared understanding of the problem, process and knowledge (van Kammen et al. 2006).

KB can be seen as a two-way process, where active policy makers participate in the problem framing and interpretation of the results on the one hand and open researchers are willing to conduct policy-relevant research on the other. As a result, with the help of the knowledge broker, is an interactive research-push – policy maker –pull process (van Kammen et al. 2006). Traditionally researchers are used to communicate better to other researchers than to the policy makers and might see the decision making as an event. On the other hand the policy makers might see the research as a product. In reality both of them are managing

complex processes, which too often are disconnected (Lomas 2007). Connection through a knowledge broker or other corresponding agent/process could help to create consensus and improve the utilization of research results.

Apart from being a conceptual approach, KB is a set of practices, like the Canadian Health Services Research Foundation (CHSRF 2003) defines the approach: *all the activity that links decision makers with researchers, facilitating their interaction so that they are able to better understand each other's goals and professional cultures, influence each other's work, forge new partnership, and promote the use of research-based evidence in decision-making.* In practice there are several different strategies of KB, ranging from simple dissemination of knowledge through to significant capacity-building - with associated increase in intensity of relationship-building, face-to-face communication and required resources (Michaels 2009; Ward et al. 2009):

   i. informing , in which RESEARCHER disseminates content
   ii. consulting, in which POLICYMAKER seeks out known experts to advise on problems delineated by party seeking counsel
   iii. matchmaking, in which BROKER identifies what expertise is needed, who can provide it and the best way to make the connections
   iv. engaging, in which one party (POLICYMAKER) frames the discussion through terms of reference and for the life of the required decision-making process, involves other parties in the substantive aspects of the problem as needed
   v. collaborating, in which parties JOINTLY frame the process of interaction and negotiate substance to address a distinct policy problem
   vi. building capacity, in which parties JOINTLY frame the process of interaction and negotiate substance to address MULTIPLE DIMENSIONS of a policy problem while considering what can be learned from doing so that is applicable to implications of the issue, future scenarios and related concerns

As policy makers carrying out policy appraisals are dealing with a range of issues, they have needs for variety of information. This means that there is no ideal form of knowledge brokering or ideal brokering strategy but the strategies are suitable for different types of decision regimes and policy problems. In addition the information and interaction needs might change in the course of the policy process (Michaels 2009). In practice a broker can carry out a variety of 'boundary management' activities. Box 1 lists some of them, but in short these can be summarized under three functions: communication, translation and mediation (Cash et al. 2003).

Box 1. Characteristics of knowledge brokering activities (modified from van Kammen et al. 2006, Michaels 2009, Cash et al. 2003)

- Organizing and managing joint forums
- Building relationships of trust
- Setting agendas and common goals
- Signaling mutual opportunities
- Clarifying information needs
- Commissioning syntheses of research
- Packaging research syntheses and facilitating access to evidence
- Strengthening capacity for knowledge translation
- Communicating and sharing evidence
- Monitoring impact
- Creating a shared vocabulary
- (Joint) production of boundary objects (e.g. scenarios, models)

The KB activities can be institutionalized in 'boundary organizations', organizations mandated to act as intermediaries between knowledge producers and users (Cash et al. 2003). The incentives for these organizations come both from research and policy making side (Michaels 2009). Box 2 lists some of the important features of a knowledge broker. Quite often boundary organizations can be hybrid forms in many ways as they can integrate various interests and activities (Hellström and Jacob 2003).

Box 2. Attributes and skills of knowledge broker (modified from Cash et al. 2003, Lomas 2007)

- Entrepreneurial (networking, problem solving, innovating)
- Trusted and credible
- Clear communicator
- Understands different cultures of research and policymaking
- Able to find and assess relevant research
- Facilitates, mediates, and negotiates
- Understands the principles of adult learning
- Involve specialized roles
- Have clear lines of responsibility and accountability

4. Context-specific forms of science-policy interface

Numerous factors may influence these relations, use of knowledge and tools for exchanging this knowledge. We call these as contextual factors or simply context and briefly present those relevant for our study. There has been much research on the differing factors which shape knowledge use, and the differing ways knowledge is employed within policy-making. We briefly review some of these below.

Howlett and Wellstead (2010) point out factors that influence of utilization of knowledge: needs and beliefs of ultimate users, delicacy of the political relations, coalitions and conflicts among policy makers, history of previous policy reform efforts, individual personalities and agendas, and f organizational routines and capacities. (van der Riet 2003) and Runhaar and Nieuwaal (2010) list theoretical conditions enabling science utilization in policy process. They name scientifically sound (valid and veritable) analysis, structured search for policy options, broad research focus, trustworthy analysis bridging interest in analysis reflecting stakeholder interests, and gains and losses, legal requirement for assessment and appraisal, alignment of research and decision-making process, and sufficient resources for research.

According to Lasswell (1970) contextuality calls for a cognitive map of the whole social process in reference to which each knowledge brokerage action or strategy is applied. The social environment is uninterested in knowledge as such (Lasswell 1970). The factors of social process that affect knowledge use are:
1) individuals as groups including value shapers and value sharers,
2) perspective including value demands, expectations and identities ,
3) situations that can be unorganized or organized, inclusive or limited in time and space,
4) base values linked to power, wealth, well-being , respect (or any other value category) of participants and their capabilities,
 5) strategies employed (to produce knowledge),

6) outcome results (success, failure, nonclassifiable), and effects (post-outcome contexts as affected by pre-outcome and outcome events) (Lasswell 1970).

Contandriopoulus et al. (2010) emphasize the viable cost-sharing between knowledge producers and users and argue that when users invest enough resources to hire producers of knowledge as consultants the knowledge is used more than in the situation where the producers are responsible of the most of the costs. They also use earlier work on types of knowledge use of Weiss (1979) as model of use of knowledge where context dictates the realm of knowledge exchange strategies aimed at influencing policy-making. Their four models are:

1) problem-solving model of knowledge use, where costs are mostly covered by users and producers, and interests of policy-makers are little polarized,

2) political model of knowledge use, where costs are covered by producers, and interests of policy-makers are highly polarized,

3) knowledge –driven model of knowledge use, where costs are covered by producers, and interests of policy-makers are little polarized, and

4) interactive model of knowledge use where costs are shared and the interests of policymakers are intermediately polarized.

They also conclude that context-independent use of knowledge is non-existent (Contandriopoulos et al. 2010).

Owens (2012) identifies anatomy of good policy advice by characterizing it as autonomic/ independent of particular administrations, having freedom to choose its own subjects, having academic credibility/trust and authority, being well-networked and being provided by scientist/body able to take combination of forms of:

1) Rational analyst providing dispassionate advice,

2) Political symbols of whose knowledge is used to justify to policies,

3) Cognitive and discursive agents acting as knowledge brokers, and

4) Boundary workers engaging in the construction and defense of boundaries in a fluid boundary between science and policy.

According to Michaels (2009) different knowledge brokering strategies suit for different decision regimes that can be seen as contexts. The four decision regimes differentiated by Michaels (2009) are

1) routine decision regime, where the consensus on policy base or issue is intact, there are few actors implementing the policy and data is needed to continue the existing routines, and the appropriate KB strategy would be informing ,

2) incremental decision regime, where policy base is largely intact but some issues in which the actors disagree arise, there are few actors in the disagreed issues, analyses and comparisons are needed, and the best KB strategy would be consulting ,

3) fundamental decision regime, where core principles of policy base are open or under fundamental change, a large number of policy-makers are involved, data of considerable scope and its translation for those with differing expertise is needed, and the best KB strategy would be collaborating, and

4) emergent decision regime, where there is no consensus of policy base, relatively small amount of actors are involved, knowledge is needed on broad level to create collaboration but on detail level only on selective issues, and the best KB strategy would be building capacity.

Michaels (2009) also relates KB strategy selection to typology of policy-problems constructed by Turnhout et al (2007). Different KB strategies can be applied to problem type situations of

1) well structured problem situation, where consensus over policy-problem prevails and the form of knowledge is data to solve the problems, and the best KB strategy would be informing,

2) unstructured problem situation where there is no consensus on the policy problem, ideas, learning and identifying problems are needed, and the best KB strategy would be engaging,

3) badly structured problem situation, where there is no consensus and shared concepts, compromise and mediation between actors are needed, and the best KB strategy would be collaborating , and

4) moderately structured problems where there is some degree of consensus on the policy problems, knowledge is needed as part of debate between stakeholders and finding different solutions, and the best KB strategy would be building capacity.

In addition, Michaels (2009) fits KB strategies in the frame of adaptive conservation management and sense-making human behavior framework of Kurtz and Snowden (2003) from order of known causes and effects suitable for informing KB strategy to un-order of complex systems suitable for engaging KB strategy, and from knowable situations of systems thinking suitable for consulting KB strategy to chaos situations of turbulence and crisis suitable for intuitive action, not characterized by earlier KB strategies. Michaels (2009) calls this intuitive approach as opportunistic entrepreneurship KB strategy.

In sum, any attempts to address (or improve) relationships between tools and policy processes within the venue of policy impact assessment must account for the different factors which shape knowledge use, including the structure of problems, and the actors involved. They must also investigate as empirical questions the various purposes to which knowledge is employed in different circumstances. In the next section, we outline our initial steps in addressing these challenges.

5. Six policy problems at different decision-making levels and jurisdictions

To test out such a process of interaction between knowledge producers (scientists, tool developers etc.) and knowledge users (policy officials and other actors), a suite of test cases of different jurisdictions and policy fields is being developed under the LIAISE network. This is work in progress, due for completion in 2013. The test case approach represents an attempt at brokering between tools, researchers and policy-makers, while delivering useful instrumental results on salient policy questions such as:
- What is the approximate scope of policy appraisal in terms of problem definition, anticipated impact areas, data needs and time horizon?
- Do existing tools fulfil the purposes of specific user needs? If not, can existing tools be adjusted or upgraded to meet the purpose?
- Which phase of policy appraisal requires which type of expertise? Will expertise be needed throughout the whole process or only for certain steps?
- What different roles does knowledge/tools play in different contexts and why?
- How can the adequacy of the knowledge and tools that are being offered be judged? Are there good-practice cases to learn from?

Following Sheate & Partidário (Sheate and Partidario 2010) we are working on a range of test cases at different geographical scales, using different assessment tools, different strategic approaches to KB, and

different policy fields. Six test cases cover climate, agricultural and resource policies from the EU, China, Estonia, Greece, Germany and Finland. All have been linked to either actual ongoing policy formulation or revision processes and their appraisal (e.g. national climate policies), broader development of the knowledge base of policy areas (e.g EU resource policy and questions around adaptation of agriculture to climate change) or implementation and its impact assessment of broader EU policies on a regional level (e.g. regional implementation of individual Common Agricultural Policy measures).

To ensure consistency across test cases, we employ a generic module-based approach to each test case. The modules guide both researchers and policy actors through a set of practical steps which are flexible enough to be employed in different ways in different cases. The nine modules are grouped into different activities: Formulation; Scoping and Planning; Instrumental analysis; and Conceptual Learning/evaluation. Although this suggests a rather linear process, they are deliberately designed to allow flexibility of use, and encourage critical thinking about their appropriateness. They include in-built opportunities for reflection on the ongoing process, conceptual background, a framework for assessing the most appropriate KB strategy to use, and help identify entry points for tool use in policy formulation and appraisal.

Test cases also include the crucial aspect of evaluation of the KB approach – how different strategies of KB work, what contextual institutional policy-making settings and personal factors of actors influence the success of the outcomes, and how effective the KB process is (Ward et al. 2009). A principal part of this evaluation involves analysis of the different ways that the KB process unfolded, and the roles taken by research advice, particularly tools, in each test case. We use the four representations of policy advisory bodies proposed by Owens (2012) and introduced in section 4: rational analysts, cognitive agents, political symbols and boundary workers. Owens' argument is that each representation can be observed to different extents, and in overlapping and complex interactions, in any case where science and politics interact. Our research responds top Owens' call for more empirical studies to help evaluate these different representations. Conscious attempts at KB often concentrate on the first and second of the representations. A key question for our test cases is therefore: to what extent do the other representations appear in practice?

Following from this is the challenge to better understand the circumstances under which influence of evidence – particularly analytical tools - is most pronounced. Studies of experiences of KB in practice (e.g. Ward et al (2009) emphasize crucial areas influencing knowledge transfer. In the test cases several contextual factors have been identified so far:
- Level of complexity of policy questions (e.g. overarching policies vs. individual targeted policy measures)
- Substantive orientation of a policy problem: 1) how well it fits to the expertise of supply and credibility of research, 2) qualitative vs. quantitative tradition of producing evidence in the policy field/ impact area
- Starting point of interaction, demand vs. supply driven knowledge provision
- Level of trust based on prior interactions (already existing vs. to be built)
- Timing of policy process, opportunity to create new evidence in time vs. feed existing evidence to the policy process
- The acceptable level of flexibility – balancing iterative, unpredictable policy processes and structured research questions

- policy-making and knowledge transfer cultures – level of openness: receptive vs. closed, culture of learning

Because the success of knowledge brokering is dependent on interpersonal and communication skills (Ward et al. 2009) it is also important to know how knowledge brokering is interpreted among researchers. The researchers involved in the test cases so far have defined knowledge brokering as "interaction and dialogue, better understanding, sharing, moments of communication, negotiation and organising". They have been using as knowledge brokering techniques phone conversations, meetings, seminars, interviews, facilitation of group work among policy-makers, identification and bringing together central policy-makers/users, and bespoke tool demonstrations for policy-makers.

6. **Results so far: Typology of different modes of science-policy interface operation**

Contandriopoulus et al. (2010) argue that the best available source of advice for someone designing or implementing a knowledge exchange and trying to maximize the knowledge use would be empirically informed and sound conceptual frameworks that can be used as field guides to decode the context and understand its impact on knowledge use and the design of exchange interventions.

Knowledge brokering provides an umbrella term for spectrum of strategies and different strategies requiring different competencies (Michaels 2009). We also argue that usually most SPI situations are a mix of many contextual factors needing also a mix of KB strategies, depending on the content of the policy-making as well as phase of policy-making starting from problem definition and ending e.g. on monitoring of impacts of the chosen policy-option.

Based on the literature presented in chapter 4 and experiences gained so far in the test cases we present in table 1 different contextual factors which affect on the selection and success of KB strategy and individual means and forms of KB activities and identify which strategy suits best for which type of contexts.

Table 1. Preliminary lists of contextual factors affecting knowledge brokering. The suitable KB strategies are indicated as form i to vi, i= informing, ii=consulting, iii=matchmaking, iv=engaging, v=collaborating, vi=buiding capacity.

Contextual factor				
Complexity of a problem definition (Turnhout et al. 2007; Michaels 2009)	Well-structured problem (i)	Unstructured problem (iv)	Badly structured problem (v)	Moderately structured problem (vi)
Decision regime (Michaels 2009)	Routine decision regime (i)	Incremental decision regime (ii)	Fundamental (change) decision regime (v)	Emergent decision regime (vi)
Sense-making condition (Kurtz and Snowden 2003; Michaels 2009)	Order (causes ->effects) (i)	Unorder (complex systems) (iv)	Knowable systems, systems thinking (ii)	Chaos (intuitive action)
Organizational norms and routines (Turnpenny et al. 2008)	Desk-officers use tools and need advice/ updates on tools (ii, iv)	Desk-officers do not use or commission use of tools and use in-house knowledge (iii)	Desk-officers commission tools/knowledge from consultants (ii)	Desk-officers commission tools/knowledge from research community (ii, iv)
Share of costs of knowledge production in politized/non-politized situations (Contandriopoulos et al. 2010)	Costs are covered by policy-makers/ users in little/non-politized/polarized situation (problem solving use) (v)	Costs are covered by knowledge producers in highly politized/polarized situation (political use) (iii)	Costs are shared between knowledge users and producers in intermediately politized situation (interactive use) (ii, iv)	Costs are covered by producers in little/non-politized/polarized situation (knowledge-driven use) (i,vi)
Actor initiating the knowledge exchange	Knowledge exchange initiated by knowledge users/ policy-makers (ii, iv, v)	Knowledge exchange initiated by knowledge producers (i)	Knowledge exchange initiated by a third party (e.g. specialized knowledge broker institution) (iii)	
Trust - history of knowledge change between users and producers	A long history (5 – 15 years) (v, vi)	A moderate history (2-5 years, several contacts, contacts and projects) (iv)	A short history (1-year/ e.g. one contact, contract or project) (ii, iv)	The users and producers of knowledge have not collaborated before (i, ii)
Trust – scientific credibility, autonomy, independency	High expertise of knowledge producers in targeted policy-area (i, ii, iv, v)	Some expertise of knowledge producers in targeted policy-area (ii, iv)	Independent knowledge production (iv, v)	Knowledge production is part of some sectoral administration or interest (i, ii)
Broadness of policy-making	Making overarching policies (climate change) (iii, v, vi)	Developing sub-policy of overarching policy (e.g. traffic policy as part of climate policy) (ii, iv,v)	Narrow sectoral policies (i,ii,iv)	Developing Individual policy measures (i, ii, iv,v)
Qualitative/ quantitative knowledge need or tradition	Only qualitative knowledge is used (iii, vi)	Mostly qualitative knowledge is used added with some quantitative (ii,iii,)	Mix of equally qualitative and quantitative knowledge (i-vi)	Mostly quantitative knowledge is used (i,ii)
Phase of policy and IA process	Problem identification and defining objectives	Development of policy options (iv,v)	Analysis of impact and comparison of objectives (ii)	Monitoring and evaluation (vi)

	(iii, iv)			
Flexibility and equivalence	Highly unpredictable policy process and predetermined, structured research questions (iii)	Highly unpredictable policy process and flexible, open-ended research questions (v)	Relatively predictable policy process and structured research questions (ii, iv)	Relatively predictable policy process and flexible, open-ended research questions (ii, iv, v, vi)
Openness, inclusiveness	Closed policy-making culture, closed knowledge production (in form of final research publications etc) (i)	Open policy-making culture, closed knowledge production (i, ii)	Closed policy-making culture, open knowledge production (iv)	Open policy-making culture, open knowledge production (in form of seminars, panels, group discussions etc.) iv, v, vi)
Legal requirement for appraisal and assessment of policies	Legal requirement and detail procedure for appraisal (iv, v)	General legal requirement exists without set procedure (v, vi)	Well-established practices exist but without legal requirements (iv, v, vi)	No legal requirements or established practices (iii)
Alignment of research and decision-making processes	Research and decision-making process are fully integrated (vi)	Research and decision-making process are partly integrated (e.g. IA) (v, vi)	Research and decision-making process cross in certain moments (ii, iv)	Research and decision-making process are parallel (i, ii)

The context typology will be further tested, developed and revised after more experiences and reflections from the test cases have been gained. Different contexts and factors and their dimensions will be explored in each six test cases. Typical situations and the most suitable KB strategies and activities will be collected and discussed. Additional relevant contextual factors may also arise in the course of the process and our understanding of the contexts and the suitability of KB strategies will increase. The contextual factors will be further explored, and related to wider literatures on the factors influencing uptake of evidence in policy processes.

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