SPIRAL Briefs
SCIENCE POLICY INTERFACES: RESEARCH, ACTION & LEARNING

Iterativity and dynamism in science-policy interfaces

The Brief in brief

This brief examines the role of iterative and dynamic processes in science-policy interfaces (SPI). This brief is aimed at those developing SPIs, as well those evaluating or funding SPIs.

Understanding SPI impacts

Science-policy interaction mechanisms based on linear knowledge transfer - "knowledge speaking truth to power" - often fail to influence policy makers' and public behaviour. Especially in cases of high uncertainty and contested values – quite common in issues related to biodiversity loss and conservation – SPIs' influences on target audiences stem from complex two-way interactions, learning and trust-building processes (see SPIRAL briefs "A myth-busting guide to science-policy interfaces" and "Focus on impacts"[1]).

The credibility, relevance and legitimacy (CRELE) of knowledge, and the processes through which it is brokered, provide a partial explanation of the effectiveness and impact of SPIs, alongside numerous contextual factors. Considering CRELE, how to increase it, and how to deal with the inevitable trade-offs among its components, are powerful approaches towards improving interactions at the science-policy intersection (see SPIRAL briefs "Keep it CRELE: credibility, relevance and legitimacy for SPIs" and "CRELE Choices: trade-offs in SPI Design"[2]).

Yet the CRELE model is rather static and does not fully capture the vital dynamic and iterative aspects of science-policy interfaces. Trade-offs are often over time rather than immediate (a boost to relevance today at the expense of credibility tomorrow, for example). Repetition can substantially increase the power of a message. The CRELE model alone does not sufficiently capture the way in which processes of iteration and repetition can be central in explaining SPIs' influence.

[1] http://www.spiral-project.eu/sites/default/files/Myth-busting.pdf
http://www.spiral-project.eu/sites/default/files/21_Focus-on-Impact.pdf
[2] http://www.spiral-project.eu/sites/default/files/07_Keep-it-CRELE.pdf
http://www.spiral-project.eu/sites/default/files/13_Brief_CRELE-choices.pdf

Dynamic features in SPIs

SPIRAL research identified specific features of the goals, structures, processes and outputs of SPIs that can explain CRELE and the effectiveness of SPIs. Many of these features have strong dynamic and iterative elements.

SPI aspects	Dynamic features
Goals	Vision – understanding of stakes, forward looking, adaptation to context. Drivers – demand and supply both dynamic and dependent on potentially changing context.
Structures	Financial and human resources –balance of continuity and renewal, individual learning and development.
Processes	Continuity – dynamic maintenance of people, structures and roles. Trust building – iterative procedure of constructing trust relationships. Capacity building – iterative procedure of identifying and addressing internal and audience capacity needs. Horizon scanning – iterative procedure for matching activities to emerging policy needs and science developments. Adaptability – responsiveness to changing contexts, flexibility to change
Outputs	Appropriate outputs – iterative identification of needs, timely delivery, performance review Quality assessment – dynamic processes to ensure quality, apply best knowledge, keep up with state of the art, revision of outputs Translation – iterative processes of matching messages to audience interests and abilities, repeated presentation, variation of formats

Iterativity and the dynamic interaction between science and policy

The CRELE model needs to be extended to take full account of dynamic features. SPIRAL has suggested the attribute of "iterativity" to do this. Iterativity puts emphasis on the added value of dynamic and repetitive features of SPI structures, objectives, processes and outputs.

This draws attention to SPIs' potential to influence policy and behaviour more effectively through dynamic interaction between science and policy, and recognises that CRELE alone cannot explain influence. Iterativity is not a simple dynamic dimension of CRELE, but emerges as a separate attribute: iterativity can influence CRELE, but also has strong direct influences on SPI contexts and participants, and can enhance learning and impact even where CRELE attributes remain unchanged.

For example, regular and repeated interactions are needed to create commitment, mutual trust and understanding of diverse positions and reasoning. Learning takes time, and people may need to hear a message several times, and in different ways, before it sinks in and even more before it changes behaviour. Iterativity for SPIs therefore encompasses the evolution of structures, objectives, processes, knowledge, outputs and relationships in continuous and repeating science-policy interactions.

Iterative and dynamic interaction strategies

Repetition and iteration can be particularly important where information runs counter to audiences' preconceived ideas, and especially if it runs against decisions that have already been taken. People have a tendency to accept confirmatory information uncritically, but to counter-argue or resist contradictory information. They may even selectively seek exposure to confirmatory sources, and resist exposure to conflicting sources.

Dynamic aspects of interaction are important to overcoming these tendencies, and successful strategies include:

- presenting evidence early, sequentially, and iteratively;
- trust-building and developing non-threatening communication contexts;
- building capacities and joint creation of areas of agreed background, knowledge and principles from which to build.

More generally, regular iterative best-practices include quality control procedures, internal and external performance review, horizon scanning and updating of SPI structures and processes.

Even more fundamentally, people involved in SPIs should recognise that, while context and CRELE are central to determining the impact of SPIs, these factors change over time, at least in part due to SPI activities. Seeing interaction as an iterative process of co-evolution, exerting influence on all participants, emphasises both the ability of SPIs partly to shape the future contexts within which they act, and the need for flexibility to change internal structures, processes and even goals in response to learning and development through the communication process.

Final thoughts

The long-term sustainability and success of thriving science-policy processes must be built on credibility, relevance and legitimacy not only today but also tomorrow. As a corollary, an understanding of the influence of SPIs today requires consideration of their history of iterative communication and co-evolution with their contexts. In a complex environment and with complex issues, science-policy interactions can rarely be understood as linear processes or one-shot occurrences. Both the effective organization of an SPI with its objectives, structures and processes, and its participation in knowledge production, synthesis, exchange and use, are dynamic process in which repetition, feedback, learning and adaptation play central roles in unavoidably evolving context. Thinking about these dynamic aspects of credibility, relevance, legitimacy and iterativity help us understand both when and why SPIs have influence, and how science-policy processes can be developed to promote more influential SPIs able to contribute to the pressing social and ecological need to halt biodiversity loss and the further deterioration of ecosystem services and to develop strategies for sustainability.

Looking for more information on science-policy interfaces?

For more SPIRAL results, including separate briefs focussing on lessons learned from other SPI processes, see companion SPIRAL briefs at http://www.spiral-project.eu/content/documents

This brief is a result of research and interactions within and around the SPIRAL project. This brief was written by Rob Tinch, Estelle Balian, and Sybille van den Hove (Median); Juliette Young and Allan Watt (CEH); Simo Sarkki (University of Oulu); Jari Niemelä (University of Helsinki).

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