Available online at www.sciencedirect.com
ScienceDirect
journal homepage: www.elsevier.com/locate/envsci

Co-constructing inclusive knowledge within converging fields: Environmental governance and health care

Timo Assmuth [a,b,*], *Jari Lyytimäki* [a]

[a] *Finnish Environment Institute (SYKE), Environmental Policy Centre, PO Box 140, FI-00251 Helsinki, Finland*
[b] *University of Helsinki, Department of Environmental Sciences, PO Box 65, 00014 Helsingin Yliopisto, Finland*

ARTICLE INFO

Keywords:
Environmental health
Sector coordination
Inclusiveness
Knowledge concepts
Science–policy interface

ABSTRACT

Ongoing complex global ecological and societal transitions pose challenges of including actors with different knowledge. We focus on approaches to gaining shared understanding and acting on it in the converging fields of environment, health care and environmental health. Starting from similarities between these fields with regard to knowledge and actor inclusion, we rethink 'knowledge', 'brokering' and 'science–policy interfaces'. Using conceptual models, we structure and characterize the multi-dimensional and interactive co-production and application of types of knowledge (scientific and other) in governance contexts shaped by institutions, political agency and policies (sectorial and integrative). We investigate cases of knowledge brokering, representing different types from formal to informal, international to national, and research-centered to action-oriented. We find both shared and isolated problems and solutions in the studied sectors and settings regarding knowledge brokering, for instance with respect to precaution, reflecting the dynamics in environmental and health care and their contexts. Methodologically, our analyses show the importance of heuristic and participatory approaches to explicating interpretations and dealing with disagreements about knowledge, values and premises for actions.

1. Introduction

Ongoing global transitions and complex environmental and social changes pose challenges also in terms of including multiple relevant actors with different interests and abilities in policy deliberations. In addition to official institutions, various other actors participate in governance, and institutions have increasingly stressed the need for such inclusiveness (CEC, 2001; WHO & UNEP, 2008). However, established practices favoring relatively few groups of knowledge providers and types of knowledge are hard to change (Gornitzka and Sverdrup, 2011). For example, a review of knowledge brokering within environmental health revealed that almost half of the 67 assessed tools were used only by experts (Liu et al., 2012). Attempts to widen the circle of actors and the knowledge base may be sidelined by democracy deficits, social upheavals, financial crises and technological transitions.

As policies in democratic societies are largely about knowledge claims, the processes and issues within the

* *Corresponding author at*: Finnish Environment Institute (SYKE), Environmental Policy Centre, PO Box 140, FI-00251 Helsinki, Finland. Tel.: +358 040 5907712.
E-mail address: timo.assmuth@ymparisto.fi (T. Assmuth).
http://dx.doi.org/10.1016/j.envsci.2014.12.022
1462-9011/

generation and application of knowledge become critical (Juntti et al., 2009). The role of knowledge and the conduct of knowledge management take on new aspects with the development of science and technology, notably for information and communication, and of society at large. New ways of learning and unlearning develop for instance due to social media (Lyytimäki et al., 2009). It is no wonder that knowledge and its foundations, uses and impacts become contested in new ways as shown by debates on global issues such as climate change (Skrydstrup, 2009) or on local issues such as environmental and health effects of new solutions for groundwater use (Lyytimäki and Assmuth, 2014). Thus, knowledge ''brokering'' or, rather more generally, the deliberation, negotiation and associated co-construction of knowledge, becomes a key function in societies, in the relationships between actors and in their interactions with the environment (Jasanoff, 2004).

Knowledge brokering (KB), a relatively recent approach for deliberating and negotiating on knowledge (Barkley, 1991; Thompson et al., 2006; Lomas, 2007), has developed rapidly in areas that are knowledge intensive and where the evaluation and translation of evidence to applications is crucial (Holzmann, 2013). Different types and purposes of KB have been identified, from synthesizing and checking evidence to legitimation of actions. Various approaches have been utilized in relation to environmental protection (Michaels, 2009), while most systematic use and also scrutiny of these methods have taken place within public health (Urquhart et al., 2011; Chew et al., 2013; Lavis et al., 2013; Ridde et al., 2013).

Knowledge brokering involves several contested questions ranging from choices of appropriate communication tools to power relations. Some models of the relationships of actors in knowledge brokering or co-construction, for instance in risk analysis and governance (Jasanoff, 1993), have been considered simplistic (Horlick-Jones and Sime, 2004). Even the fundamental ontological concepts of knowledge have varied widely, along with the overall theoretical and methodological inclinations, ranging from positivist to constructivist and relativist notions. Critiques of positivism have been offered e.g. from perspectives of information systems (Boland and Pondy, 1983) and of science in society (Asdal, 2005; Felt et al., 2007), both emphasizing inter-subjectivity.

In responding to these challenges, there is a need to replace linear with dynamic and positivist with reflective models of knowledge construction, use and loss (Lyytimäki et al., 2009; Assmuth and Finkel, 2014). Specifically, better understanding is needed of how multi-actor governance and associated dynamic negotiation over knowledge reshape the horizontal integration of sectors, prompting many forms of inclusive deliberation. Likewise, pragmatic models of KB need to be developed. In this article we review approaches and investigate issues in developing KB and in co-constructing inclusive knowledge in its multiple meanings.

2. Methodological approaches and scope

We focus on approaches to gaining and acting on knowledge in the converging fields of environment and health care and their border-zone, environmental health. We note as a starting point similarities between these fields with regard to inclusion, e.g. in holistic knowledge, in combining individual and collective views for pluralism, and in ethics that are extended to future generations, humanity, and non-human organisms (Assmuth et al., 2010; Assmuth and Finkel, 2014). We scrutinize 'knowledge', 'brokering' and 'science–policy interface' emphasizing inter-subjectivity and collective rationality (Habermas, 1984), moving from linear to dynamic models of knowledge accumulation and loss. We challenge not only narrowly positivist 'social engineering' approaches to knowledge but also alternatives that deny the need for pragmatism and normative frames (cf. Surel, 2000).

We develop conceptual models based on earlier work, in order to highlight the relevant features of KB related to environmental health. The models include those of governance contexts (e.g., Jordan et al., 2003) and of science–policy interfaces (e.g., Hammill et al., 2013). We examine in what contexts and processes KB of various kinds takes place. Specifically, we pay attention to the criteria for evidence (of problems and solutions) and to associated interpretations of precaution, based in part on different requirements for proof and competence (heavily regulated in medicine) to check claims, projections and advice.

We complement the conceptual analyses by case studies and observations based on our participation in projects involving KB. At the EU level, we investigate the EEA's Environmental Health Narrative as an alternative to factual monitoring based assessments. We then discuss KB spanning sectors, levels and stages of governance in the case of dioxins in Baltic Sea fish. At the national level, we analyze mandatory KB in Environmental Impact Assessment and Health Impact Assessment in Finland, and a concrete KB tool Opasnet.fi, an open platform by the Finnish National Institute of Public Health and Welfare.

3. Conceptual models of sector relationships in knowledge brokering

We first conceptualize the multi-dimensional and interactive co-construction (co-generation) and co-application of types of knowledge (scientific and experiential, also value-laden), in multi-actor governance within partly overlapping sectors such as human health care and environmental management (Fig. 1). This multi-sectorial governance model is situated in an ecological and socio-political context which includes the dimensions of polities (political institutions and agencies); policies (sectorial and coordinative); and, going beyond self-sufficient and 'empty' governance (Jordan et al., 2003), politics within these. Framing of the system with regard to practical functions and to knowledge, we relate it to other policy domains, other scientific and professional disciplines, and other societal concerns.

Focusing on Europe, the institutions include democratic, elected representations and delegated bodies and agencies of the EU and its Member States, public research institutes and expert organizations, and increasingly also non-governmental actors such as representatives for enterprises and other non-governmental or civil society organizations (Fig. 2; Knill, 2001). This structure is generalizing; environmental and health

Please cite this article in press as: Assmuth, T., Lyytimäki, J., Co-constructing inclusive knowledge within converging fields: Environmental governance and health care. Environ. Sci. Policy (2015), http://dx.doi.org/10.1016/j.envsci.2014.12.022