



# Evaluation of CREW: review of good practice in evaluating science-policy-practice knowledge exchange



Final Report

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## **Centre of Expertise for Waters (CREW)**

CREW is a hub which ensures that water research and expertise is available and accessible to the Scottish Government and its agencies. Its overall purpose is to provide clear scientific advice to inform key areas of government policy, ensuring that existing and new research expertise can feed into development of water-related policy in Scotland in a timely and effective manner.

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## Executive Summary

### Background to research

Evaluation of the science, policy and practice interfaces of CREW (ESPPI-CREW) was commissioned with the overall aims of:

- Understanding existing science: policy: practice interfaces;
- Measuring and analysing how CREW's structure, members and activities contribute towards these interfaces; and
- Evaluating performance and suggesting ways to improve links between research, policy and implementation.

### Objectives of research

A targeted literature review on evaluation of knowledge exchange (KE) was undertaken within ESPPI-CREW, and findings are reported in Evely et al<sup>1</sup>. In addition, a review of good practice in evaluating science-policy-practice knowledge exchange was carried out at the start of the project to inform the approach of ESPPI-CREW in year 1 of CREW operation. This report summarises findings from the preliminary review of good practice.

### Key findings

KE evaluation is widely agreed in the literature to involve evaluation of outcomes, generally viewed as the impact of the KE interaction, as well as the evaluation of the processes involved in implementing the KE mechanism under assessment.

Impact evaluation is agreed to be the most difficult type. Process evaluation involves assessment of the implementation of KE, and is widely viewed as more straightforward, so long as appropriate aims and objectives are identified for the KE interaction, and the evaluation is of performance against these.

KE evaluation is still relatively undeveloped in the literature, and those addressing KE evaluation commonly conclude that further primary research is needed to develop knowledge of what works to promote successful KE, and what effective evaluation of KE looks like.

KE relationships are most commonly conceived in the literature as between scientists on the one hand and policy makers on the other, but some papers refer to policy makers and practitioners as being within the same grouping. The literature reviewed says little about the distinctions between policy and practice decision makers, and any implications of these for effective KE.

General evaluation theory and methods are the main foundations for KE evaluation. A number of good practice principles are widely agreed at a high level of generality:

- Evaluation should be of a KE initiative that is planned, with agreed clear objectives;

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<sup>1</sup> Evely, A., et al. (2012) Evaluating knowledge exchange: A review (*supporting CREW report*)

- Evaluators should work closely with the people planning and implementing the KE initiative to agree methods and monitoring data for the evaluation;
- Evaluation design should be based on robust theory and explicit conceptual frameworks, using evaluation methods that are appropriate to the objectives of the KE evaluation;
- Some form of impact assessment is needed if KE evaluation is undertaken; measuring change attributable to KE requires the establishment of a baseline/benchmark and a counterfactual, and identification of other factors that may influence observed change;
- Value for money is of increasing importance. KE evaluation is a further cost on top of the cost of KE and the cost of the work that is being communicated. KE evaluation design should be proportionate to the KE mechanism, including its cost, both in financial terms and in the time and effort required from evaluators/evaluation informants.

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## 1. INTRODUCTION

The project Evaluating Science, Policy and Practice interfaces (ESPPI-CREW) was commissioned to support the three aims of CREW, which are:

- To build networks;
- To create new capacity;
- To increase impact of, and from, the research.

ESPPI-CREW has the overall aims of:

- Understanding existing science: policy: practice interfaces;
- Measuring and analysing how CREW's structure, members and activities contribute towards these interfaces; and
- Evaluating performance and suggesting ways to improve links between research, policy and implementation.

A targeted literature review on evaluation of knowledge exchange (KE) was carried out within ESPPI-CREW. In addition, a review of good practice in evaluating science-policy-practice knowledge exchange was undertaken at the start of the project to inform the approach of ESPPI-CREW in year 1 of CREW operation. This report summarises findings from that preliminary review of good practice. The results of the targeted literature review are published in the associated CREW report Evely et al. (2012). Findings from measuring CREW's structure, members and activities and evaluating performance are published in the ESPPI-CREW final report (Hastings et al. 2012).

The review of good practice involved a rapid search of existing literature to describe which knowledge exchange interactions have been evaluated (content), and how such evaluations have been carried out (method). The focus was on practical examples to identify key messages from experience of evaluating science-policy-practice knowledge exchange.

The review was oriented within the wider context of policy evaluation. Material for the review was sourced from requests to PRAG members for relevant references, and from ESPPI-CREW team members' existing knowledge. Literature reviewed covered general good practice in evaluation and in KE evaluation, with a focus on:

- Institutional strategies for KE evaluation (e.g. from research funders)
- Examples of evaluations of specific KE initiatives (e.g. of KE services)
- Conceptual frameworks for KE evaluation
- Reviews of KE evaluation literature
- Examples of KE evaluation mechanisms (e.g. feedback forms).

## **2. KEY MESSAGES FROM THE REVIEW OF GOOD PRACTICE IN KE EVALUATION**

### **2.1 Evaluating knowledge exchange**

The overall aim of KE evaluation is to improve the effectiveness of communication, in this case among scientists, policy makers and practitioners. This contributes to better fits between the direction of research and the needs of policy and practice, and provides evidence of which KE mechanisms work to bring about envisaged change (Gagliardi et al. 2008; Eden, 2011).

‘Knowledge exchange’ is widely agreed to mean communication between different individuals or groups, via interactions that are non-linear, i.e. the flow of knowledge is not one-way (Mitton et al, 2007). The term Knowledge Transfer (KT) is also widely used, but most commonly as synonymous with KE, rather than a one-way flow of knowledge, which previous use of KT may imply.

### **2.2 KE interfaces**

KE interfaces are not well-defined in the literature, but are generally taken to be the means by which knowledge is communicated. Such means are also commonly referred to as mechanisms of KE. Many mechanisms are identified in the literature; these are generally viewed as continuums of informal/formal, passive/active, on-going/one-off, and personal/impersonal (Meagher et al. 2008).

Key KE mechanisms identified in the implementation literature include:

- Face-face exchange (consultation, regular meetings)
- Awareness sessions for decision makers
- Networks and communities of practice
- Facilitated meetings between decision makers and researchers
- Interactive, multidisciplinary workshops
- Capacity building within service and delivery organisations
- Web-based information, electronic communications
- Steering committees (to integrate views of local experts into designs, conduct and interpretation of research)

### **2.3 Theory and principles of evaluating KE**

Literature discussing theory and practice in evaluation of KE mechanisms follows the general principles of evaluation, with evaluation widely agreed to mean measuring actual outcomes and impacts of activity against anticipated ones. Typologies of evaluation (e.g. formative, process, outcome) and evaluation methods (e.g. surveys, interviews, analysis of monitoring data) in the general evaluation literature are used in discussions of approaches to KE evaluation and good practice in this area.

Literature that focuses on evaluation of KE interactions commonly makes use of organising or conceptual frameworks to guide development of KE evaluation strategies. Such frameworks aim to capture information flows within the complex relationships involved in KE. It is widely agreed, however, that the research and policy worlds diverge in terms of concerns, priorities, incentives, language, dynamics, conceptions of knowledge, time scales, status, and power, often resulting in communication difficulties, mismatched supply and demand, rejection, and implementation failure.

Key methods identified (Mitton, et al. 2007) to overcome such issues in KE include:



- Personal contact between researchers and policymakers;
- Clear summaries of findings with recommendations for action;
- Good quality research;
- Research that includes effectiveness data;
- Quality of relationships and trust between research partners (i.e. policy makers and researchers);
- Tailored communication based on information needs and standards of evidence needs; and
- Timely presentation of research findings.

#### **2.4 Evaluating KE processes, outcomes and impact**

KE evaluation is widely agreed to involve evaluation of outcomes, i.e. the impact of the KE interaction, as well as the evaluation of the processes involved in implementing the KE mechanism under assessment. Three types of impact are commonly cited in the literature- conceptual (indirect impact, i.e. on the knowledge, understanding, and attitudes of policy makers/practitioners), instrumental (direct impact, i.e. specific research leads to specific policy/practice decision) and symbolic (that legitimizes existing policies or practices) (Meagher et al. 2008; Joubert, 2007; Nutley, 2009; RCUK, 2011; HM Treasury, 2011; SFC, 2011)). Several sources also include capacity building as a form of impact.

Impact evaluation is agreed to be the most difficult type of evaluation (Meagher et al. 2008; Nutley, 2009). Assessing impact means measuring any change that can be attributed to the initiative, while taking account of other factors that may have contributed to the change, including whether any change measured would have happened anyway. Measuring impact involves either tracking forwards (specific findings or KE mechanisms to actual/potential knowledge production; research capacity building; policy or product development; sector benefits; wider societal benefits) or tracking backwards (from decisions and practice to research/KE mechanism influences).

Impact of KE is seen as particularly sensitive to other influential factors, in particular, that even the best examples of the KE interface may result in no impact (Metcalf and Perry, 2001; HM Treasury, 2011).

#### **2.6 Barriers to evaluating impact**

The literature commonly cites barriers to effective impact evaluation (Mitton, et al. 2007; Gagliardi et al. 2008), including:

- Research impact processes are often complex, diffuse and fuzzy;
- KE is often based on interpersonal relationships between individuals;
- Impact is long term and often indirect;
- Additionality of KE is hard to identify, i.e. would effects have happened anyway;
- Serendipity plays a major role in KE but is hard to trace (and attribute to KE activity);
- Case sampling for KE evaluation may be uneven and misleading;
- Linear models of KE interactions are not always useful, since research use/impact are often non-linear and highly mediated;
- Difficulties exist in accounting for the contribution made by the KE interaction; and
- Taking account of the receptivity of the context- are the actual or potential KE impacts to be assessed?

In light of these barriers to impact evaluation, some authors (see for example Meagher, et al. 2008) suggest that the best proxy is evaluation of the processes that lead to high quality KE. Examples of such processes include: value/incentives for impact generation; two-way researcher/user interactions; financial support; dedicated staff and infrastructure; use of and facilitating role(s) of intermediaries.

Process evaluation, involving assessment of implementing KE interactions, is widely viewed as more straightforward, so long as appropriate aims and objectives are identified for the KE interaction, and the evaluation is of performance against these. The key issue for KE process evaluation is assessing less formal interactions.

### **2.5 General good practice principles in KE evaluation**

Approaches to KE evaluation methods in the literature are wide-ranging. There is some difference among authors, some advocate qualitative approaches, some quantitative, some mixed methods and some call for increased use of randomised control trials (RCT) and systematic reviews to assess the impact of KE. A number of good practice principles are however widely agreed at a high level of generality (Kleine, 2009; NERC, 2010; :

- Evaluation should be of a KE initiative that is planned, and for which clear objectives have been agreed;
- Evaluators should work closely with those planning and implementing the KE initiative to agree evaluation methods and the collection of monitoring data to underpin management of the KE process and its evaluation;
- Evaluation design should be on the basis of robust theory and explicit conceptual frameworks, and evaluation methods selected that are appropriate to the objectives of the KE evaluation;
- Some form of impact assessment is needed if KE evaluation is undertaken. In particular, measuring change attributable to a KE interaction requires the establishment of a baseline/benchmark and a counterfactual, and identification of other factors (contextual, co-incident) that may influence observed change;
- Value for money is of increasing importance. KE evaluation is an additional cost to both that of the KE itself the work that is being communicated. KE evaluation design should be proportionate to the KE mechanism, including its cost, both in financial terms and in the time and effort required from evaluators/evaluation informants.

## **3. CONCLUSIONS**

**KE evaluation** is still relatively undeveloped in the literature, and those addressing KE evaluation commonly conclude that further primary research is needed to develop knowledge of what works to promote successful KE, and what effective evaluation of KE looks like. General evaluation theory and methods are the main foundations for KE evaluation in the preliminary literature review; references are also made to innovation theory; communication theory, implementation studies, and systems theory; social learning theory and participative approaches. Several conceptual frameworks specifically address the direction of information flows involved in KE; so far these do not attempt to relate these flows to specific KE mechanisms or specific methods of their evaluation.

**KE relationships** are most commonly conceived in the literature as between scientists on the one hand and policy makers on the other, but some papers refer to policy makers and practitioners as being together on the other hand to scientists, and Walter et al. (2003) refer to this group as 'decision

makers'. The literature reviewed so far says little about the distinctions between policy and practice decision makers and implications of these for effective KE.

**KE mechanisms** are generally described as techniques/methods/tools for communication among scientists, policy makers and practitioners; literature reviewed so far lists rather than analyses these mechanisms, often describing specific examples of these mechanisms in practice. While the literature commonly stresses the importance of timely, accessibly formatted, tailored and face-to-face mechanisms, specific KE mechanisms are only loosely associated with these requirements- there is no explicit theoretical basis for selecting specific KE engagements according to timing, participants or type of knowledge to be communicated.

The literature is not clear on how KE mechanisms are related to KE interfaces, although interfaces can be interpreted as:

- The sum of individual KE mechanisms;
- The 'place' where scientists meet the different groups (stakeholders/policy makers/practitioners) participating in and using their research;
- A planned series of KE activities (e.g. research funders' strategies for KE in the research process across their portfolios of funded research); and
- The culture and context of KE activities/mechanisms.

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