

# Developing a rapid evidence assessment (REA) methodology

## A UKERC TPA technical document

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## Context

The Technology and Policy Assessment TPA theme of the UK Energy Research Centre (UKERC) has conducted systematic reviews (SR) of contentious energy policy questions since its inception in 2004. In the third phase of UKERC funding the TPA team are formalising the inclusion of more rapid evidence review techniques to be utilised alongside the existing systematic review methodology. More rapid assessments were trailed in Phase II (see for example the working papers for the Biomass Resources project<sup>1</sup>) and this experience will be built upon in this document, which describes the concepts of Rapid Evidence Assessment (REA) and the process that the TPA team are engaged in to develop and refine a REA methodology for energy policy evidence-based reviews.

## Review Methods Consultation

On the 1<sup>st</sup> April 2015 the TPA team met with experts in the field of evidence review and Rapid Evidence Assessment (REA). The experts were asked to provide advice and guidance to assist the TPA team in adapting the research methodology. Several important points of advice and guidance emerged in that meeting. These are presented below, and form the basis for the integration of new approaches to evidence review in the TPA approach.

The key advice emerging from the meeting was:

- Establish the type of review needed to meet the needs of policymakers by:
  - Establishing a relationship with the policymaker audience
  - Establishing the nature of project constraints (time/resource)
  - Refining the scope of the project in liaison with the audience.
- Take care to maintain independence despite relationship with the policymaker audience.
- Do not limit the methodological range to REA and SR, and consider methods such as Quick Scoping Reviews (QSR) where appropriate.
- Automation and text mining might provide a route to quicker reviews while maintaining sufficient robustness in any findings.
- Consider developing a proprietary database of evidence previously reviewed.

The following section describes in more detail the nature of REA and its place in the context of all evidence review approaches.

## Rapid evidence assessment

Policy development in the 21<sup>st</sup> century is rapid, to the point that often the examination of the evidence base struggles to keep pace with policymakers (Thomas *et al.* 2013). In response to this challenge, new techniques of evidence review have been trialled which aim to maintain the rigour of full systematic review, while being less expensive and more rapid

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<sup>1</sup> Available at <http://www.ukerc.ac.uk/programmes/technology-and-policy-assessment/energy-from-biomass-the-size-of-the-global-resource.html>

(GSR 2013). The Government Social Research Service (GSR 2013) lists six types of review methods in its REA toolkit:

- **Literature review**, a non-systematic but quick collation and analysis of evidence;
- **Quick scoping review**, a non-systematic overview of existing research on a constrained topic;
- **Rapid Evidence Assessment**, a short but systematic assessment on a constrained topic;
- **Full systematic review**, a broad systematic review of existing research on a topic;
- **Multi-arm systematic review**, a systematic examination of different types of evidence, with several research sub-questions; and
- **Review of reviews**, a full systematic review of existing review studies.

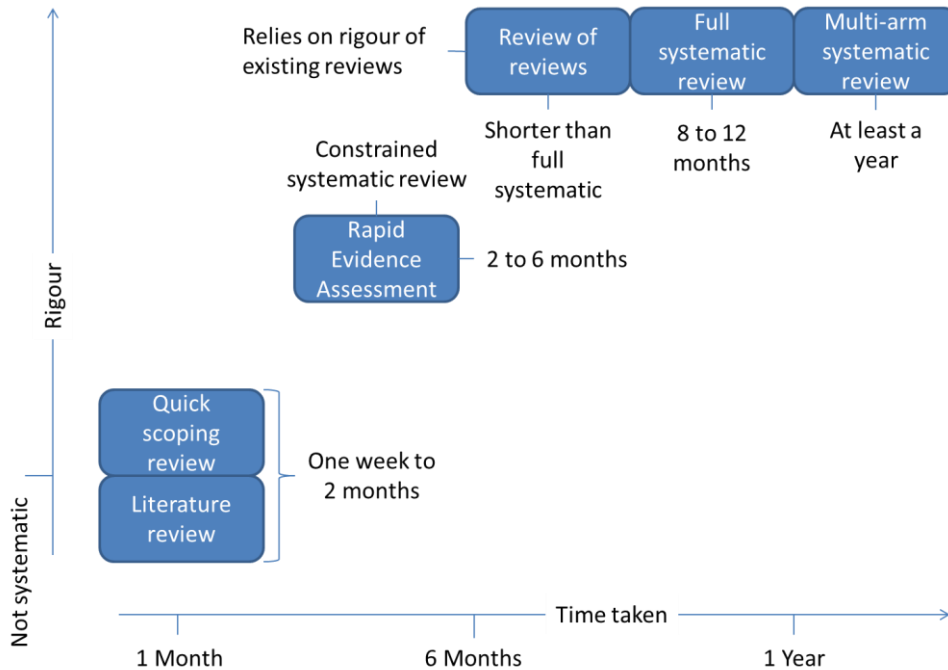
REA is of particular interest to policy researchers as it addresses the concerns of meeting the fast moving demands of policy makers while trying to maintain the rigour of full systematic review (Hailey *et al.* 2000; Burton *et al.* 2007; Khangura *et al.* 2012). **Error! Reference source not found.** provides a schematic of the different review methods mapped against their rigour and the time needed to conduct them, and serves to highlight the trade-off between rigour and rapidity. This trade-off is acknowledged by practitioners of evidence review methods. As one practitioner notes:

*“Sometimes it’s possible to conduct what is essentially a systematic review in a short timescale; and sometimes this is challenging to the point of impossibility”.* (Thomas 2013)

As with the development of full systematic review methods (Sorrell 2007), the development of REA has been pioneered in areas of social research such as public health. Where amenable this review method has proved successful, and has been applied to several aspects of public health policy making (Hailey *et al.* 2000; Newman *et al.* 2007; Underwood L *et al.* 2007; Watt *et al.* 2008). Practitioners have also reflected on the successfulness of this approach in the academic literature (Thomas *et al.* 2013). In particular it was found that restricting searches to only the most relevant databases did not adversely affect the results of health technology oriented REAs (Watt *et al.* 2008). Successful application of REA is most tractable where the following is true (Watt *et al.* 2008; Thomas 2013; Thomas *et al.* 2013):

- The research question is focused or constrained
- The research question ‘maps’ easily to existing research; and
- There are established methods for appraisal and synthesis of the reviewed evidence

**Figure 1: Schematic mapping out the different types of evidence review methodology**



*Source:* Adapted from (GSR 2013)

## Incorporating REA into the Technology and Policy Assessment (TPA) theme

As with the adaptation of full systematic review to energy (Sorrell 2007), there may be some challenges in applying REA to the energy research evidence base. In reference to the three factors of tractable REA application mentioned above, energy research questions are:

- typically difficult to constrain;
- rarely map easily onto the existing research; and
- often have different and conflicting metrics and methods of appraisal (Sorrell 2007).

It is therefore important to establish at the earliest stage a tractable way to apply the existing method of REA to new energy research questions. It is also important to define which TPA research questions are amenable to REA methods when establishing the priority research topics for UKERC phase three. In order to develop the REA approach for use in the Phase 3 TPA research program the following process is being pursued:

1. Conduct a review of existing evidence surrounding the current state of REA practice;
2. Develop a 'straw man' approach to a TPA REA method adapted in the light of TPA experience conducting Full and Multi Arm Systematic Reviews on energy topics; and
3. Host an REA practitioner workshop to utilise existing expertise in this area and help inform the final TPA REA protocol (initial workshop undertaken).

The result of this process will be a robust new protocol for rapid evidence reviews delineating the process of REA that will be conducted by TPA in UKERC phase 3, clearly

distinguished from the existing Full Systematic Review protocol currently conducted by the TPA. A generic description of the stages of REA is presented in the Annex for reference.

The UK hosts some of the foremost expertise in REA practice, including the Institute of Education's Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre), and the GSR. Ongoing communication with EPPI-Centre and the GSR will help inform the development of this protocol, and members of these research organisations have already assisted the TPA team through dialogue and workshop participation. The TPA team are also engaging with the DEFRA/NERC activity developing rapid evidence assessment in the water management/environmental arena.

## Quick Scoping Reviews

In addition to the use of REA the TPA team are also exploring the usefulness of QSR, in response to the advice of evidence review experts. QSRs provide systematic records of the relevant literature which may be presented in various forms, but do not typically accompany that evidence with analysis or narrative. While this type of review does not provide the type of exposition that TPA reports typically provide, they do have the advantage of being much quicker to produce. There may value in the TPA utilising this type of approach where very quick presentation of relevant evidence may be a priority over a thorough going critique and analysis.

## Automation, Text Mining and Proprietary Database

The TPA team are continuing to investigate the potential usefulness of automated literature searches, text mining and building a reusable database of energy policy evidence, again based on advice given by evidence review experts. Using 'crawling' software to systematically gather grey literature evidence is a technique used by evidence reviewers examining literature and evidence in other disciplines, and there are a number of software packages capable of this type of automated searching. It was suggested to the TPA team that this approach might provide a way to reduce the time taken to gather evidence while maintaining sufficient rigour. The TPA team is continuing to investigate options to deliver this type of automation and whether it is appropriate for energy policy evidence and literature.

Text mining is another automated approach which might help improve the speed of literature searching while maintaining rigour. Text mining software can automatically gather relevant literature while also predicting the rate of diminishing returns in discovering relevant evidence. This can both improve the pace of literature searching and improve the decision making in terms of the appropriate point at which to truncate the searching effort. Whilst this technique has been used widely in other disciplines such as in public health evidence review it has yet to be applied to the energy sector evidence base. The TPA team will continue to explore the possibility of this approach with Prof. James Thomas of UCL who was present at the review methods consultation and is an expert in the application of text mining to review evidence in various disciplines.

Finally, the possibility of curating a database of previously reviewed evidence in order to provide a resource for future evidence reviews was suggested by evidence review experts. This is another technique employed by evidence reviewers in other disciplines and the practicality and usefulness of this approach will be investigated by the TPA team in their ongoing review of TPA methodological practices.

## References

- Burton, E., G. Butler, J. Hodgkinson and S. Marshal (2007). Quick but not dirty: rapid evidence assessments (REAs) as a decision support tool in social policy. Community safety: innovation and evaluation. E. Hogard, R. Ellis and J. Warren. Chester, Chester Academic Press.
- GSR. (2013). "Rapid evidence assessment toolkit." Civil Service Retrieved 31st March 2014, from <http://www.civilservice.gov.uk/networks/gsr/resources-and-guidance>.
- Hailey, D., P. Corabian, C. Harstall and W. Schneider (2000). "The use and impact of rapid health technology assessments." International Journal of Technology Assessments in Healthcare **16**: 651–656.
- Khangura, S., K. Konnyu, R. Cushman, J. Grimshaw and D. Moher (2012). "Evidence summaries: the evolution of a rapid review approach." Systematic Reviews **1**: 10.
- Newman, M., M. Bangpan, J. Brunton, J. Tripney, T. Williams, A. Thieba, T. Lorence, A. Fletcher and C. Bazan (2007). Interventions to improve the co-ordination of service delivery for High Cost High Harm Household Units (HCHHU). A systematic rapid evidence assessment. London, EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.
- Sorrell, S. (2007). "Improving the evidence base for energy policy: The role of systematic reviews." Energy Policy **35**(3): 1858–1871.
- Thomas, J. (2013). "Rapid Evidence Assessments: a bright idea or a false dawn?" Alliance for Useful Evidence Retrieved 31st March 2014, from <http://www.alliance4usefulevidence.org/rapid-evidence-assessments-a-bright-idea-or-a-false-dawn/>.
- Thomas, J., M. Newman and S. Oliver (2013). "Rapid evidence assessments of research to inform social policy: taking stock and moving forward." Evidence & Policy: A Journal of Research, Debate and Practice **9**(1): 5–27.
- Underwood L, Thomas J, Williams T and T. A (2007). The effectiveness of interventions for people with common mental health problems on employment outcomes: a systematic rapid evidence assessment. London, EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.
- Watt, A., A. Cameron, L. Sturm, T. Lathlean, W. Babidge, S. Blamey, K. Facey, D. Hailey, I. Norderhaug and G. Maddern (2008). "Rapid reviews versus full systematic reviews: an inventory of current methods and practice in health technology assessment." International Journal of Technology Assessments in Healthcare **24**(2): 133–139.

# Annex 1

## The process of Rapid Evidence Assessment

The Civil Service REA toolkit (GSR 2013) provides an REA scoping template which helps inform the design of REAs. It highlights three questions that should be considered throughout the assessment:

- What will be the breadth of each stage of the REA?
- In what way if any is the breadth being limited?
- How does this impact on the REA's conclusions?

The template then goes on to detail the various stages of assessment design. The headings and bullet points for each of these stages are reproduced below.

### Forming the team and involving users

- Does the REA team have all the necessary skills to carry out an REA?
- What particular perspectives are needed in the team or as a resource to the team?
- What are the implications of a lack of a particular capacity for the REA?
- Which users should be involved and how are they accessed?
- How will user engagement be meaningful within the tight timescale of the REA?
- Are there users that are too difficult to consult within the timescale? Is user engagement less broad than might be ideal?

### Research question and conceptual framework

- What type of question is the REA attempting to answer?
- How is the question being limited?
- How does this impact on the REA's conclusions?

### Specifying the methods of the Rapid Evidence Assessment

- What method is the REA using?
- Is the method being limited in any way?
- How does this impact on the REA's conclusions?

### Describing studies

- What is the coding strategy of the REA?
- Is the coding being limited in any way?
- How does this impact on the REA's conclusions?

### Assessing quality and relevance of studies

- How is quality and relevance being assessed in the REA?
- Is this being limited in any way?
- How does this impact on the review conclusions? For example, if studies are judged to be of 'low' quality how will this evidence be used in the making of conclusions?

## **Synthesis of findings**

- What is the REA's method of synthesis
- Is the synthesis being limited in any way?
- How does this impact on the REA's conclusions?

## **Communication and use of the Rapid Evidence Assessment**

- What are the communication, interpretation and application strategies of the REA?
- Is this being limited or expanded in any way?
- How does this impact on the meaning and use of the REA?