

Evaluating Open Access: How could the RCUK Open Access policy be assessed?

Kathryn Smith

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Department of Information Studies
Aberystwyth University
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Abstract

Purpose

The purpose of this study is to investigate how the Research Councils UK (RCUK) Open Access policy could be evaluated and whether it would be possible to use such an evaluation to bring more evidence to bear on the polarising issue of Open Access.

Aims and objectives

The aims of the study were to identify whether it would be possible to measure the outcomes of the recommendations of the Finch Report, the original catalyst for the development of the RCUK Open Access policy, and to investigate different methods of evaluation to determine whether any of these would be suitable for this purpose. This was achieved through identifying the stakeholders and success criteria of the Finch Report recommendations as well as those in the Burgess Review, an assessment of the implementation of the policy. The success criteria were used to identify measurable indicators from both reports. Different methods of evaluation were investigated to determine the most appropriate method for the RCUK Open Access policy, and from this analysis, suggestions were provided about how the success criteria and measurable indicators could be mapped onto an evaluation framework.

Method

To ascertain the basis for an evaluation of the RCUK Open Access policy, two reports were analysed using qualitative and quantitative content analysis.

Results

The content analysis revealed that the multiple stakeholders involved in scholarly communication and implementation of the recommendations of the Finch Report all needed to be represented in any evaluation, so the evaluation would need to accommodate multiple perspectives. No single evaluation would succeed in representing the plurality of requirements of an assessment of the RCUK Open Access policy, so a combination of process and outcome focused evaluations would be necessary to thoroughly understand the successes and failures of the policy.

Conclusion

Assessment of the RCUK Open Access policy through multiple evaluations would contribute to the understanding of how to maximise the impact of investment in Open Access. This would be of use not only to RCUK and other UK stakeholders, but it could also be used by those involved in scholarly communication all over the world. However, evaluations on the terms of the Finch Report itself would not include an assessment of the worth of Open Access.

Declaration

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed.....(candidate)

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STATEMENT 1

This work is the result of my own investigations, except where otherwise stated. Where correction services have been used, the extent and nature of the correction is clearly marked in a footnote(s).

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I hereby give consent for my work, if accepted, to be available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organisations.

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List of abbreviations

APC – Article processing charge

FGE – Fourth Generation Evaluation

HEFCE – Higher Education Funding Council for England. Where HEFCE is mentioned the reference also applies to the Scottish Funding Council, the Higher Education Funding Council for Wales and the Department for Employment and Learning (Northern Ireland).

HEI – Higher education institutions

NIH – National Institutes of Health

RCUK – Research Councils UK

RIN – Research Information Network

STEM – Science, Technology, Engineering and Mathematics

U-FE – Utilization Focused Evaluation

CC-BY – Creative Commons Attribution Licence

Glossary

Burgess Review – *Review of the implementation of the RCUK Policy on Open Access*. A report arising out of a review of the first sixteen months of the RCUK Open Access policy (from 1 April 2013 to 31 July 2014) and written by Professor Sir Robert Burgess.

Finch Report – *Accessibility, sustainability, excellence: How to expand access to research publications: Report of the Working Group on Expanding Access to Published Research Findings*. A report arising out of a working group commissioned to increase access to research publications and written by Dame Janet Finch.

FundRef – Registry to unambiguously link research outputs to funders.

Gold Open Access – Research output made openly available by the publisher immediately, sometimes requiring the payment of a fee.

Green Open Access – A version of the research output made available through a repository. May be subject to publisher conditions such as limitations on the version that can be used or the requirement for an embargo period.

Jisc – An organisation support for digital services to UK higher and further education.

PubMed Central – A free archive of biomedical and life sciences journal literature.

Open Access – Free, unrestricted online access to research outputs.

ORCID – Unique researcher identifier to unambiguously link research outputs to researchers.

Repository – An online archive of research outputs for the purpose of preservation and dissemination.

1 Introduction

1.1 Purpose of the dissertation

The publication of the Finch Report (Finch, 2012) and the subsequent policy requirements, the strengthened Research Councils UK (RCUK) Open Access policy and the Higher Education Funding Council for England (HEFCE) Open Access policy have brought about large changes for the players involved in scholarly communications in the UK. Academic libraries in particular have had to make provision for much more resource for managing Open Access at their Higher Education Institutions (HEIs). The requirements to manage many individual payments, manage increased use of the institutional repository (or in some institutions even introduce an institutional repository) and to carry out advocacy activities among researchers have required extra staff time. Publishers too have had to create systems to deal with many micro payments in addition to the macro payments for journal subscriptions. These changes have required the creation of new jobs or put increasing strain on existing roles.

Even before the publication of the Finch Report, Open Access was a divisive issue with strong opinions not only about its importance to scholarly communication but, among proponents, about which route to Open Access is the most successful. The Finch Report itself provoked similar partisan reaction: in particular, the RCUK block grant and the provision for paid Open Access. Three years on from the introduction of the new RCUK Open Access policy, the costs of implementing the recommendations of the Finch Report have begun to become apparent. The purpose of this dissertation is to investigate whether these costs could be measured and to investigate how these costs relate to the benefits of the policy.

Open Access is a deeply emotive and polarising issue. The debate seems to be driven by ideology and entrenched opinions on both sides. What is required is an unbiased analysis of the costs and benefits, and this dissertation aims to discover, by considering the example of the RCUK Open Access policy, whether this is possible.

1.2 Background

In 2012 a report based on the work of a working group and commissioned by the UK Government was published about how to increase access to research publications produced both in the UK and worldwide. The title was *Accessibility, sustainability, excellence: how to expand access to research publications* (Finch, 2012), but it is commonly known as the Finch Report, after the chair of the working group, Dame Janet Finch.

The Finch Report made recommendations about how increased access to research could be achieved. The increased access to world-wide research was to be achieved through changes to publisher licences and availability of research material through new providers such as public libraries. It was the recommendations for increasing access to UK research, however, that have led to the most disruptive changes. The main outcomes of the Finch Report have been the introduction RCUK's Open Access policy along with associated funding and the policy from HEFCE that requires Open Access for all research papers to be submitted to the post-2014 Research Excellence Framework.

RCUK had an existing Open Access policy before the publication of the Finch Report, which required that the research they funded was made 'available for public use' (Research Councils UK, 2005). However, as a result of the recommendations of the Finch Report, this policy was developed to include a much more definitive set of requirements for RCUK funded research. In addition, a block grant was provided from top-sliced funds and distributed among HEIs to enable researchers to meet the requirements of the policy. The policy requires that all peer-reviewed papers acknowledging RCUK funding are made either immediately Gold Open Access and published with a Creative Commons Attribution (CC-BY) Licence or deposited in a repository and made available no later than the maximum embargo specified by the specific funding council (six months for STEM disciplines and twelve months for arts, humanities and social sciences) (Research Councils UK, 2005).

After the first sixteen months of the implementation of the RCUK Open Access policy, a review was carried out by Professor Sir Bob Burgess (Burgess, 2015).

1.3 Research problem

The Finch Committee stated the desire to make more UK research available for anyone to read, but such an aim is not without cost. The first manifestation of the Finch report was the strengthening of the RCUK Open Access policy, and the question to be answered in this study is whether it is possible to assess if the RCUK Open Access policy has succeeded in delivering the aims of the Finch Report and, if so, at what cost.

1.4 Research aims and objectives

1.4.1 Research aims

One aim of this study was to identify what the recommendations of the Finch Committee were trying to accomplish and how it would be possible to measure whether or not these aims had been achieved. The other aim of the study was to investigate different methods of evaluation to determine whether any of these would be suitable to assess whether the ambitions of the Finch Report had been realised.

1.4.2 Research objectives

- To identify the stakeholders involved in the RCUK Open Access policy.
- To identify the success criteria of the Finch Report recommendations.
- To identify how the success criteria relate to the implementation of the RCUK Open Access policy, specifically as outlined in the Burgess Review.
- To identify the measurable indicators in the Finch Report and Burgess Review.
- To determine which method of evaluation would be most appropriate for the evaluation of the RCUK Open Access policy.
- To determine how the success criteria and measurable indicators could be mapped onto an evaluation framework.

1.5 Structure

The literature review presents an overview of the existing literature about determining the impact of Open Access. It also covers recent developments in evaluation literature that are pertinent to the assessment of Open Access.

The methodology section provides an explanation of the research methods chosen for this dissertation and a justification for their use.

The results section discusses the results of the qualitative and quantitative content analysis.

The discussion section sets out these results in the context of the evaluation literature discussed in the literature review to propose a framework for the evaluation of the RCUK Open Access policy.

The conclusion summarises the findings and suggest future possibilities for research in this area.

2 Literature review

Open Access is becoming an increasingly important part of the research landscape all over the world, but particularly in the UK, where a number of charitable and government funders have mandated that the research they fund is made openly available. Open Access has been discussed in the scholarly literature since the 1990s, but the increasing visibility of the topic has prompted a large growth in study of the characteristics of Open Access in the last few years. The actions of funders in mandating Open Access have also led to a greater variety of approaches to analysing its effects with an increased focus on economic aspects.

Many stakeholders are affected by the changes in scholarly communication caused by Open Access, but the most well represented group of stakeholders considered in the literature is authors. There is a large body of literature discussing the citation benefit or otherwise of making papers Open Access. These questions dominate the field, particularly the early discourse. Historically, the concerns of the other stakeholders are less frequently addressed, although this is beginning to change.

Despite the increasing representation of concern with Open Access in the literature, there is very little that specifically addresses methods of evaluating the success or otherwise of Open Access policies. The literature around evaluation, therefore, has a lot to offer to provide a framework for such an evaluation.

2.1 Themes in the Open Access literature

All the literature related to Open Access concerns the extent to which it has impacted (or will impact) the status quo for the stakeholders involved in scholarly communication, such as authors, publishers and consumers of research. This literature can be divided into two categories: the impact of Open Access on the scholarly communication processes and the consequences of making research Open Access.

In the early years of the academic discourse, the majority of the literature concerned the latter, with the greatest emphasis placed on the consequences of making research outputs Open Access on citations. This reflects the concerns of many of the early proponents of Open Access, namely the authors themselves, and the desire to encourage other researchers to make their work openly available. In more recent

years, there has been a move to consider the wider impact of Open Access for other stakeholders such as consumers of research. As Open Access has become increasingly mainstream, there has also been emphasis on the economic consequences.

The changing external environment has now also introduced a new theme to the Open Access literature related to the processes around achieving Open Access. This cannot be completely separated from the economic consequences, as the discussion of processes is generally an implicit or explicit discussion of costs, but it is important to recognise the new facet of the discourse that the discussion of processes represents. The move from a largely voluntary Open Access 'movement' to an environment where Open Access is increasingly mandated means that many more parties are affected by the challenges created.

2.1.1 Consequences of Open Access

In large part this research is concerned with discovering whether making research Open Access has a positive impact for the author, although there are also some studies that address the consequences of Open Access for other stakeholders such as the users of research outputs.

2.1.1.1 Impact of Open Access on citations

A large proportion of the literature about Open Access is devoted to the most easily quantifiable element of research assessment, the citation. Many studies have sought to determine whether making papers Open Access by either the Gold or the Green route has a statistically significant impact on citations. The majority of these studies have concluded some positive effect (for example Eysenbach, 2006; Gargouri et al., 2010; Norris, Oppenheim, & Rowland, 2008), although several studies have found either no statistically significant effect or no causal effect (for example David, 2008; Davis, Lewenstein, Simon, Booth, & Connolly, 2008; Gaulé & Maystre, 2011; Kurtz et al., 2005). These studies reflect the importance of advocacy appealing to the self-interest of authors to convince them of the personal benefits of Open Access to drive voluntary adoption.

Though these studies were important to produce concrete evidence of the benefits of Open Access, they are limited in several aspects. Crucially, the environment in the UK has changed from one encouraging voluntary adoption of Open Access to one

where it is mandated. These mandates are connected to research funding from public or charitable sources. Consequently, the important issues become less about personal advantage than about wider assessment of the impacts of Open Access to a larger group of stakeholders, such as to the economy in general. The wider perspective also necessitates an engagement with assessment of impact beyond citations, as this does not adequately capture activity outside academia (or even within it).

2.1.1.2 *The wider impact of Open Access*

The impacts of Open Access beyond citations are harder to measure than simply counting the number of citations. Some authors, such as Albanese (2008) have attempted to measure the success of Open Access policies in quantitative terms. In this case, the effect of the National Institute of Health's (NIH) Open Access policy on deposits in PubMed Central was studied. This is a useful attempt, particularly as it looks at retrospective activity rather than projecting future activity; however, it is a very narrow metric. It only addresses one aspect of potential evaluation of Open Access interventions: author behaviour. Other metrics are required to determine the entire effect of the increased deposit of papers.

O'Keeffe, Willinsky and Maggio (2011) also assess the NIH policy and address the users of the research made available through the policy. This is one of the few examples of an attempt at quantitative evaluation of the effect of an Open Access policy on information use. This research aimed to assess the effect of increased availability of medical research through the NIH policy, using surveys of health professionals. As such it outlines a method for evaluating one of the primary groups for whom Open Access policies are designed, practitioners who would otherwise not have access to relevant research. Although it also addresses the limitations of evaluation through self-reporting, it demonstrates the importance of segmenting stakeholders to try to determine the effect on users of research of an Open Access policy.

McGuigan tackles the fundamental purpose of the NIH policy from a theoretical perspective (2015). This work recognises the breadth of stakeholders in the dissemination of research that can be defined as 'the federally funded researcher, the academic journal and its governing society, the commercial journal publishers,

universities and their libraries, and taxpayers' (McGuigan, 2015, p. 57). The taxpayer is fundamental to this assessment of the NIH policy, because the assessment takes into account the perceived moral dimension of public access to research. This is premised on the assumption that Open Access is a moral issue and uses the concept of 'public good', defined as, 'the characteristics of being non-rivalrous in consumption and non-excludable in use or both' (Weimer and Vining, 2005, p. 72 quoted McGuigan, 2015, p. 58). McGuigan argues that the NIH policy transforms scientific knowledge into a public good and as such addresses one of the most intangible aspects of Open Access arguments, the concept of fairness and justice in relation to access to research.

2.1.1.3 Economic consequences of Open Access

The public and charity funding associated with Open Access mandates has brought a sharper focus on achieving value for money and a more developed sense of the costs, not just to the potential losers, such as publishers, but to all participants in scholarly communications. The literature surrounding the economic consequences of Open Access ranges from speculative opinion pieces to detailed economic analyses of different Open Access scenarios. There is very little analysis, however, of real spending on Open Access, as the majority of the studies addressing the economic consequences are based on simulations or modelling. As it becomes possible to gather real data about how the environment is actually changing, it will be necessary to do retrospective studies.

John Houghton, more than anyone else, has sought to investigate the potential economic consequences in the form of both costs and benefits of Open Access (Houghton, 2010, 2011; Houghton & Sheehan, 2009; Houghton & Swan, 2013; Swan & Houghton, 2013). In a discussion of the potential economic benefits of Open Access, the authors outline these impacts for the three categories of benefit: research, industry and government and the wider community (Houghton & Sheehan, 2009). The article discusses the way in which 'accessibility' and 'efficiency' can be added as parameters to the Solow-Swan model (a model used to explain exogenous growth (Novales, Fernández, & Ruiz, 2010)) and used to estimate the returns of making academic research openly available to R&D. This analysis provides a starting point, at least, for measuring the potential economic impact of Open Access,

although it does not help to determine the more intangible benefits to the wider community.

The analysis of the potential economic benefits of Open Access is supplemented by estimates of the costs of different publishing models. Houghton and Oppenheim (2010) compare the costs associated with subscription publishing, Open Access publishing and Open Access self-archiving. These estimates are somewhat limited. Their conclusion of the potential savings offered by Open Access publishing includes assumptions about the administrative savings in 'such areas as library acquisition and handling, search, discovery access and research use, funding, reporting and evaluation' (Houghton & Oppenheim, 2010, p. 47), but there is no equivalent emphasis on the administrative costs of processing Open Access payments. Although the costs to publishers of dealing with individual articles are included in the calculation, there is no acknowledgement of the costs to the other parties, in many cases university libraries, involved in making the payments. Also, the estimated costs do not (and could not) take into account the changes in behaviour of publishers, resulting in changes in the costs of Open Access article processing charges (APC).

Swan and Houghton analysed the costs and benefits of transition to Open Access, specifically for UK Higher Education Institutes, in a report commissioned by Jisc, *Going for Gold? The costs and benefits of Gold Open Access for UK research institutions: further economic modelling. Report to the UK Open Access Implementation Group* (2013). This discusses the different outcomes if UK universities pursued a Gold or Green Open Access policy, either unilaterally or as part of worldwide developments. This study highlights the importance of considering the global nature of scholarly communication and the great differences caused by different APC prices.

Other studies have used modelling to try to determine the economic consequences of different Open Access scenarios, such as Bernius *et al.* (2013). This study uses a simulation method to model different Open Access or status quo scenarios to compare the projected outcomes for author citations, for accessibility of scientific information and for affordability. Unlike Swan and Houghton's modelling, the simulation method takes greater account of transitional situations and mixed models.

Jubb also used modelling to investigate the costs and benefits of different scholarly communication scenarios in a report commissioned by the Research Information Network (RIN) to model increased access to journal articles over a five year period (2011). The study measured projected changes in access using a standardised unit of access (SUoA), taking into account embargo period, version and functionality. The cost effectiveness of the various scenarios was calculated by dividing the annual net cost by the increase in SUoA. The study modelled transitional and steady state costs and took into account sunk costs, such as the existing Green Open Access infrastructure, all of which need to be factored in to any cost benefit analysis of a policy such as the RCUK Open Access policy. The multiple criteria used in the modelling created a large degree of uncertainty for some scenarios, in particular the Gold Open Access scenario, specifically around the cost of APCs. The results were very different depending on whether an assumption of average APC of above or below £2000 was used. This demonstrates the importance of repeating such analysis with actual APC data and the importance of a standardised metric to assess costs and benefits of different scenarios. This point is also addressed by Morrison, who discusses the importance of the metric 'cost per article' to comparing Open Access and subscription costs (2013).

Assessments of the economic impacts of Open Access publishing are also addressed in a more discursive manner. Rizor and Holley (2014) return to the founding tenants of Open Access to determine whether the movement has succeeded in meeting its aims. Specifically the authors evaluate the extent to which either Gold or Green Open Access achieves immediate Open Access to research, a sustainable business model or a reduction in journal subscriptions. The analysis is based on general observation rather than primary research but serves to remind Open Access advocates and detractors alike that is necessary to determine what is and is not working.

The literature about Open Access is somewhat biased towards a positive view of the movement in general. For this reason, the writing of Anderson is an important contribution to the field. Although not opposed to Open Access, he does consider the unintended consequences of both Gold and Green Open Access and usefully addresses the variety of stakeholders and acknowledges that their requirements can be in conflict (2014). The trade-offs and compromises identified by Anderson

emphasise the need for thorough evaluation of Open Access activity to allow all stakeholders to make rational choices.

2.1.2 Open Access processes

The processes surrounding Open Access, in general, and Open Access mandates, in particular, have been addressed in some of the more recent literature. These generally consider the experience of only one stakeholder at a time.

The researcher experience of Open Access mandates has been investigated in response to the NIH Open Access policy, by Charbonneau and McGlone (2013). They used questionnaires to determine the attitude of academics to the NIH policy. This revealed the potential confusion for researchers of complying with Open Access policies and the perception that it is very time consuming.

Gardner and Green (2014) outline the difficulties presented to publishers in moving from a macro to micro payment system to deal with paying Open Access charges. The authors highlight the particular problems faced by hybrid journals, where parallel administration for subscription and Open Access content is required. The challenges to publishers of the new Open Access environment are also discussed by Pattinson and MacCallum (2014), who suggest that publishers need to take account of an increasing need to meet the requirements of institutions and funders. However, they also emphasise the opportunities for publishers and institutions in increasing access to the research they support.

Academic libraries play a fundamental role in administering Open Access on behalf of researchers, but there are few examples in the literature of the challenges faced by this stakeholder. Russell has discussed the significant extra resource required by the Library to offer this support and carry out the advocacy and monitoring required to comply with RCUK's requirements (2014). There has also been quantitative research to determine the costs of administering the RCUK Open Access policy, in the report *Counting the Costs of Open Access* (2014). This used a survey of HEIs to estimate the time taken in administering and monitoring compliance for the RCUK policy for the 2013/14 academic year and estimated these costs to be at least £9.2m in addition to the £11m spent on APCs.

2.2 Themes in evaluation literature

Although rarely stated, all the literature surrounding Open Access is concerned with evaluating its impact to some extent, albeit with a great variety in the degree to which this is informed by robust evidence. However, these evaluations are very narrow in focus, and there is no precedent in the literature for a systematic evaluation of a policy such as the RCUK Open Access policy that takes account of the costs and benefits for all stakeholders. It is, therefore, necessary to turn to the literature of evaluation for a theoretical framework for attempting such as broad ranging evaluation.

A key moment in the development of evaluation theories came from Scriven’s distinction between formative and summative evaluation (Scriven, 1967). Formative evaluation occurs during the implementation of the programme and informs improvements to the process. Summative evaluation occurs after the programme has ended and determines whether the intervention was effective (Palfrey, Thomas, & Phillips, 2012). The formative/summative dichotomy persists in many evaluation theories, but Chen (1996) discusses the limitations of this, whilst acknowledging the importance of recognising the difference between process and outcome evaluation. He discusses how process evaluation is not only for the purposes of improvement and outcome evaluation is not only for assessment, as outlined in Figure 1.

		Evaluation functions	
		<i>Improvement</i>	<i>Assessment</i>
Programme stages	<i>Process</i>	Process-improvement evaluation	Process-assessment evaluation
	<i>Outcome</i>	Outcome-improvement evaluation	Outcome-assessment evaluation

Figure 1 Basic types of evaluation. Adapted from (Chen, 1996, p. 123)

The evaluation structure outlined by Chen offers a number of advantages in attempting an evaluation of a complex policy. It allows for a flexible mix of different types of evaluation depending on the stage in the process and particularly depending on the stakeholder.

Evaluation has been studied since the early- to mid-twentieth century and has experienced trends and iterations. Pawson and Tilley (1997) outline this history in the context of setting up the background for their own theory of Realistic Evaluation discussed below. They discuss the move from early discourse characterised by an

emphasis on experimentation to a constructivist slant and a rejection of the positivist desire for a single truth with an acknowledgement of the plurality of voices that need to be taken into account. Pawson and Tilley are disparaging of both the positivist and constructivist developments in evaluation research, but the latter has something to offer an evaluation of a multi-stakeholder policy.

There are two themes in the evaluation literature of the last few decades that are particularly pertinent to evaluation of a policy such as the RCUK Open Access policy. These themes are the involvement of the stakeholder and the focus on the real world and use of findings.

2.2.1 The involvement of the stakeholder

One of the most significant developments of evaluation literature in the last quarter of the twentieth century was the recognition of the importance of the stakeholder in successful evaluation. This is tied to the move away from a positivist ontology to an acknowledgement of the subjective nature of evaluations. The RCUK Open Access policy involves many stakeholders with different and sometimes directly oppositional priorities. The process of the creation of the Finch Report recommendations was predicated on the plurality of opinions from multiple stakeholders; therefore, the evaluation framework requires an acknowledgement of multiple voices.

Smith and Cantley (1985) developed a model of pluralistic evaluation, which emphasises the importance of viewing the intervention from multiple points of view and the importance of different methods of data collection. In complicated evaluations with multiple stakeholders it is hard to achieve an objective evaluation. Evaluations are also subject to claims that the views of a particular group of people are disproportionately represented. A pluralistic approach aims to achieve an objective assessment based on the representation of the views and success criteria of multiple participants and to achieve acceptance of the conclusions for the same reason.

The importance of hearing the voices of all stakeholders also plays a key part in Fourth Generation Evaluation (FGE) espoused by Lincoln and Guba (1989). FGE recognises the perspectives and concerns of all stakeholders in the intervention. Unlike pluralistic evaluation, however, the concept of consensus plays a fundamental role in FGE. For this reason negotiation is an important part of FGE as this is how

consensus around measures of success is reached (Palfrey et al., 2012). The role of the evaluator is, therefore, particularly important in FGE as they need to act as a mediator to achieve this consensus (Clarke & Dawson, 1999).

The problem with these stakeholder-focused and pluralistic evaluations is that they do not come to neat and definite conclusions. They are necessarily wide ranging in their interpretations and cannot produce a simple yes/no answer to whether a policy intervention has worked. In the context of public policy interventions this is problematic, as a simple message about the worth of a policy is often what is desired. They are also complicated and, therefore, expensive to organise and require the buy in and participation of multiple parties.

2.2.2 The use of evaluations

One of the primary proponents of usefulness of evaluations is Patton with his Utilization Focused Evaluation (U-FE) (2008). He emphasises evaluation that can actually be used and, therefore, places a great deal of importance on identifying the key players or 'decisionmakers' and 'information users'. It is the responsibility of these key players to determine the form and methods required for the evaluation (Palfrey et al., 2012). Like the evaluation methods that focus on involvement of stakeholders, U-FE involves negotiation between participants, but the emphasis is slightly different because the 'decisionmakers' and 'information users' dictate the terms of the evaluation, as they are the ones with the power to act on the findings.

Although Patton is one of the figures Pawson and Tilley use to identify some of the failings they see in evaluation literature, their own offering of Realistic Evaluation (Pawson & Tilley, 1997) shares the consideration of the context of the evaluation and the mechanism by which interventions work. In Realistic Evaluation, the focus is not on whether the intervention worked, but on how it worked. It can be represented by the formula 'mechanism + context = outcome'. Realistic evaluation involves creating a theory for the effectiveness of the programme (Palfrey et al., 2012). The importance of a theoretical framework is also discussed by Chen and Rossi (1983). They emphasise the importance of theory to the evaluation process that incorporates external variables. This allows consideration of both the intended and unintended consequences to achieve an understanding of not only whether or not an intervention worked but, if not, why not.

It is difficult to argue that evaluations should not be useful or realistic, but these approaches present complexities, primarily relating to the engagement of the commissioner of the evaluation. U-FE requires this party to be able to clearly articulate what they want to achieve from the evaluation, and there could be insufficient buy in from policy makers for a theory driven approach (Palfrey et al., 2012).

2.3 Summary

The divide between process and consequences in the existing Open Access literature echoes Scriven's formative/summative dichotomy (Scriven, 1967); the current research around Open Access addresses either one or the other, with either a formative concern with the mechanics of managing Open Access or a summative view of the outcomes. This is where evaluation of a large scale Open Access intervention such as the RCUK Open Access policy could contribute to the greater understanding of Open Access, as it would be an opportunity to combine assessment of the process around and consequences of Open Access. Rather than maintaining the clear split between formative and summative evaluation, a full consideration of the impact of Open Access requires a combined approach as outlined by Chen (1996).

Where the existing literature does measure the impact of Open Access on processes or scholarly communications outcomes, it addresses only one stakeholder. The RCUK policy impacts on many stakeholders, and any evaluation would need to manage the priorities and success criteria of all these different groups. The evaluation literature offers theories for managing the concerns of multiple stakeholders, so can provide a theoretical framework for this assessment. Therefore, an evaluation of the RCUK Open Access policy would require a synthesis of many of the methods outlined in the existing Open Access literature to assess the impact of the policy on different stakeholder groups, but it requires the framework of evaluation literature to determine how to manage the different, and sometimes conflicting, priorities of these varied stakeholders.

3 Methodology

3.1 Methods chosen

The study began with a review of the literature surrounding both Open Access and evaluation. As there is little literature that specifically addresses evaluation of Open Access interventions, it was necessary to use the literature surrounding both areas. The method of data collection chosen was content analysis.

3.2 Literature review

The literature review was carried out using a combination of online search tools, using key terms. Literature was also found through following references in the material consulted.

3.2.1.1 Search strategies

The search terms listed below were used in various combinations. Searches were carried out primarily in two databases, Library, Information Science & Technology Abstracts and Scopus. The University of Bristol and Aberystwyth University search tools were also used.

Search term	Alternative term
Open Access	OA
Evaluation	Evaluate
Research Councils UK	RCUK
National Institute of Health	NIH
Wellcome Trust	
Public policy	
Government policy	
Programme	Program

Table 1 Search terms

3.3 Content analysis

The analysis of the potential for evaluation of the RCUK Open Access policy based on the recommendations of the Finch Report was carried out primarily by content analysis of the Finch Report itself. This was supplemented by content analysis of the report arising out of a review of the implementation of the first year of the RCUK policy, *Review of the implementation of the RCUK Policy on Open Access* (Burgess, 2015). These documents were analysed using a mixed method of both qualitative and quantitative content analysis.

3.3.1 Justification of method

In order to determine the possibility of evaluating the success of the RCUK Open Access policy based on the aims stated in the Finch Report, it was necessary to determine what those aims were. The process of consultation and production of the Finch recommendations involved dealing with conflicting interests, and it was necessary to determine how these conflicting and sometimes directly oppositional interests were managed in the production of the final report. This necessitated determining the core intentions of the Finch Report in an objective way and analysing the possibility for evaluating the RCUK policy on the terms set out in the Finch Report. The publication of the Finch Report polarised opinion among the players in Open Access (for example Curry, 2012; Harnad, 2012; Neylon, 2012; Poynder, 2012). The aim of this study was to assess what the document actually says rather than how people reacted to it. For this reason interviews and surveys were dismissed, because of the risk of an overly partisan and revisionist reaction to a document that caused so much controversy and was published four years ago.

After the first sixteen months of the RCUK Open Access policy, RCUK commissioned a review into the implementation of the policy. This involved collecting written and oral evidence from key stakeholders and resulted in the publication of a report, *Review of the implementation of the RCUK Policy on Open Access* (Burgess, 2015), which outlined recommendations for RCUK and other stakeholders. This report was useful for analysis for several reasons. Firstly, part of report details the compliance data captured by RCUK after the first sixteen months of the policy. It was, therefore, possible to consider the existing evaluation mechanisms that have been put in place. Also, the report involved an assessment of the implementation of the policy and so provided an opportunity to compare the actual problems and successes to those predicted in the Finch Report. This is also the primary evaluation of the policy that has occurred, so it is possible to judge whether this review adequately evaluates the policy, in the terms of the Finch Report itself and in the context of the wider evaluation and Open Access literature.

These documents are both state documents, which are useful sources, but they need the same consideration of reliability as other sources of evidence. Bryman uses Scott's classification of state documents to create criteria for judging such documents. These are authenticity, credibility, representativeness and meaning

(Scott, 1990 quoted in Bryman, 2012). The two documents under review in this study have arisen from much official consultation, so are adequately authentic and both clearly state a meaning. The issues of representativeness and credibility are more complicated. Bryman discusses the difficulty in determining whether a document is representative when there are no other examples to compare it to. In this situation, it is necessary to consider such documents in the context of other descriptions of the same situation (Bryman, 2012). This makes the analysis of these documents in the context of other assessments of Open Access particularly important. The final criterion, credibility, is at the heart of one of the reasons for the choice of content analysis as the method of data collection. The Finch Report and Burgess Review may or may not be unbiased documents, the multiple stakeholders involved will all have impacted on the final reports, but content analysis of the reports is the most objective way to identify the explicit and implicit concerns of the report.

3.3.2 Details of content analysis

Quantitative content analysis of the Finch Report was used to analyse the representation of the position and requirements of the different stakeholders and whether the benefits, costs and risks are evenly distributed or whether there is greater attention given to any particular groups. This was combined with qualitative analysis of themes throughout the document, including the stated and unstated aims and success criteria, to try to identify which elements would be significant to a potential evaluation. The same method of content analysis was then carried out on the Burgess Review document. The aim was to identify the extent to which these documents reveal the same concerns as the explicit and implicit concerns outlined in the Finch Report and whether the review into the first sixteen months of the policy addressed any of the measures of success described in the Finch Report.

The content analyses of the Finch Report and the Burgess Review were carried out by coding the main body of the reports (not including the executive summary and appendices). The coding was done with multiple labels to be able to provide details of the stakeholder concerned and the nature of the comment. These comments were extracted from the document and were put in an Excel spreadsheet for analysis using pivot tables. The use of coding of both the nature of the comment and the group with which it is associated allowed simultaneous quantitative and qualitative analysis of the text.

4 Results

The results of the qualitative and quantitative content analysis of the Finch Report and the Burgess Review are detailed below. The remit of the Finch Report was to ‘examine how to expand access to the peer-reviewed publications that arise from research undertaken both in the UK and in the rest of the world’ (Finch, 2012, p. 4). The RCUK Open Access policy only relates to the aim to expand access to UK research, and the analysis below pertains to only to that aspect of the report. The Burgess Review was carried out in direct response to the RCUK Open Access policy, so is analysed in full.

4.1 The Finch Report

4.1.1 Finch Report stakeholders

The Finch Report identifies a number of stakeholders affected by the changes to the scholarly communication environment in the UK recommended by the committee. These are mentioned throughout the report and are listed in Table 2.

Identified stakeholders
Academic research consumers
Academic research producers
Higher Education Institutes (HEIs)
Learned societies
HEI Libraries
Non-academic research consumers
Publishers
Research funders

Table 2 Finch Report stakeholders

These stakeholders cannot be neatly divided into those contributing to the implementation of the recommendations and those who would feel the effects. Non-academic research consumers is the only stakeholder group that is affected by the outcome of the recommendations without being involved in the implementation of the recommendations. This group incorporates people in the following categories, ‘the public, commercial and voluntary sectors, as well as in society at large’ (Finch, 2012, p. 17). All the other stakeholders are required to make changes to their processes and procedures but also are likely to feel positive or negative effects of the changes to the scholarly communication environment. The academic research producers and academic research consumers are in many cases likely to be the same people but are identifiable as discrete stakeholders. This is because the balance between

production and consumption will vary between researchers and between the institutions in which they work.

Learned societies are repeatedly mentioned throughout the Finch Report. They are discussed in their capacity as publishers of research but are considered as distinct from other research publishers. This is because they support the activity of specific research communities and, often, use revenue from publishing to subsidise other activities. Learned societies, therefore, are at particular risk from changes to the scholarly communication environment.

As well as identifying the different groups of stakeholders, the Finch Report emphasises the need for cooperation and compromise between these groups, suggesting that the aims ‘involve some compromises and trade-offs on the part of each of the key players and stakeholders in the research communications system’ (Finch, 2012, p. 102).

One group that is not specifically mentioned is taxpayers. There is some discussion of the need to balance costs and benefits, but at no point is there any suggestion that increasing access to research is not a good use of taxpayer money. The Finch Report is not actually committing any money to the achievements of its aims but does discuss the uncertainty around costs, so acknowledges the possibility that government money would need to be used, either through funders or HEIs. Although not mentioned as a specific stakeholder, the report does identify the government drivers for the recommendations (Table 3).

Identified government drivers
Transparency agenda
Economic growth
Efficiency in research
Return on investment
Research as a public good
Commitment to make research open

Table 3 Finch Report government drivers for open access

Although the Finch Report mentions many stakeholders, the attention paid to these stakeholders is very unevenly distributed.

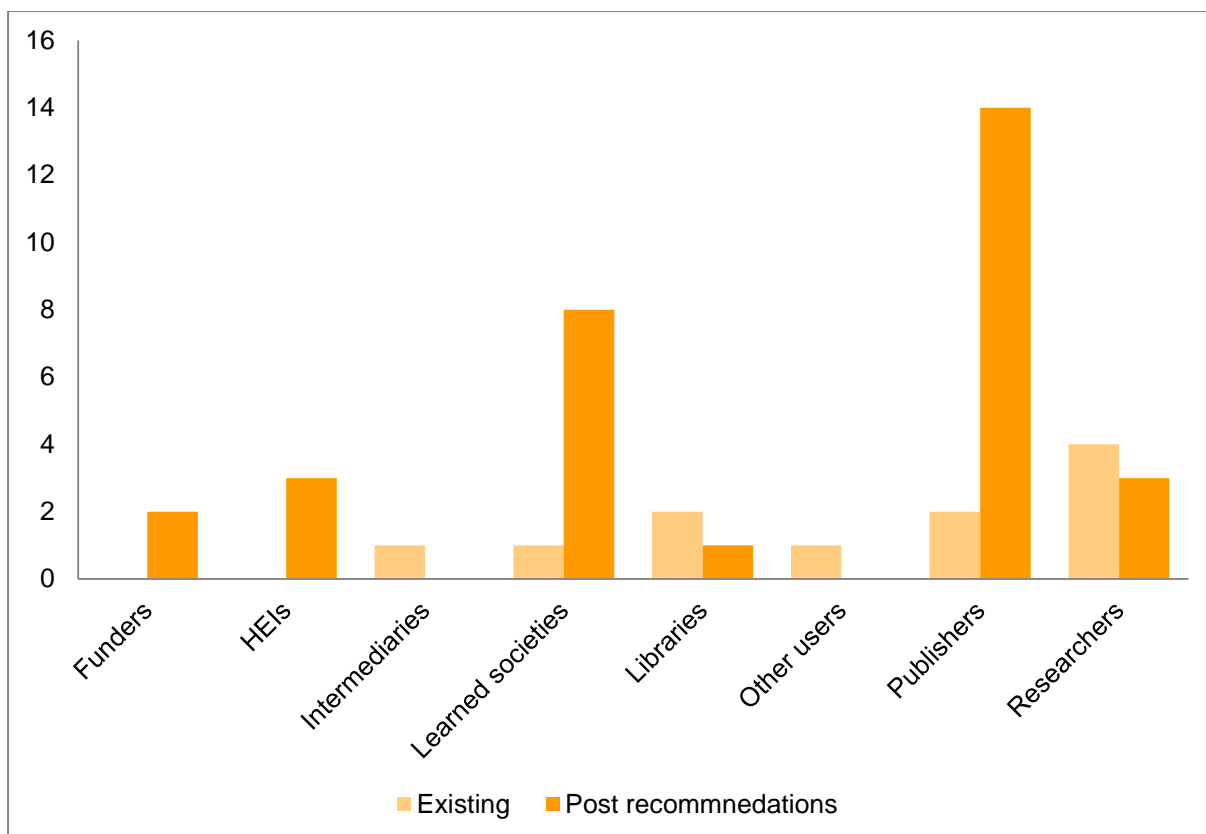


Figure 2 Finch Report stakeholder concerns

Figure 2 shows the distribution of the concerns expressed in the Finch Report for the various stakeholders. This shows mentions of a concern for the stakeholder in the existing scholarly communication environment and the potential risks of changing this environment in the manner recommended by the report. The remit of the Finch Committee was to 'examine how to expand access to the peer-reviewed publications that arise from research undertaken both in the UK and the rest of the world' (Finch, 2012, p. 13) rather than to investigate whether this is a useful aim, so it is unsurprising that there is more of an emphasis on the effect of any proposed changes on stakeholders, rather than the challenges of the existing scholarly communications landscape. The categories of HEIs and libraries could be combined, as the libraries concerned are part of HEIs. Similarly, in this context, learned societies are a type of publisher, although, there are specific concerns related to learned societies because of the nature of their business models, where subscription income subsidises other activities. Figure 2 demonstrates the strong concern with the potential danger of Open Access for publishers and learned societies. This is echoed in repeated mentions of the importance of sustainability for the publishing

industry throughout the report and the stated aim of not disrupting the ecology of the publishing industry.

It has already been mentioned that almost all stakeholders play multiple roles in the changes recommended by the Finch Report. Apart from the non-academic users, they are all required to play some role in the implementation of the recommendations, but they will also be affected by the outcomes, positively or negatively or a mixture of the two.

The potential negative effects of the recommendations explain why sustainability is repeatedly mentioned throughout the report. Financial viability for all stakeholders is shown to be extremely important. In particular this means that the balance between subscription and APC payments must be achievable for all parties: the stakeholders paying these fees (funders and HEIs) and those receiving the payments (the publishers and learned societies). In one way all stakeholders have the same need for preserving this stability; funders and HEIs (including researchers) are dependent on publishers to disseminate the research they fund and produce, and publishers need their customers to be able to afford their products. However, in another respect the requirements of these stakeholders are directly oppositional. Funders and particularly HEIs would like to see a reduction in costs, and publishers would like to protect or increase their revenues. This conflict of interest is not resolved in the Finch Report where there is a recommendation that 'universities and funders should expect to be able to use their market power as purchasers to bear down on the costs to them of both APCs and subscriptions' (Finch, 2012, p. 102), as well as the statement that a 'key requirement is therefore that publishers – whether commercial or not-for-profit - should be able to generate revenues to meet the costs of those services they provide' (Finch, 2012, p. 62). The emphasis on risk to publishers that is evident throughout the report and shown in Figure 3 demonstrates that the risks to publishers are the most frequently mentioned. This suggests that the Finch Committee thinks that the publishing industry would be best served by a continuation of the status quo. Nevertheless, the report is recommending a disruption to the status quo and yet demonstrates concern for publishers and learned societies over all other stakeholders.

There are concerns expressed for the risks for other stakeholders. This is particularly evident in the identification of the risks associated with costs. The stakeholders concerned with cost uncertainty are primarily HEIs (including libraries) and funders. However, this distribution of identified risks again suggests that the protection of publishing revenues is more of a concern than the potential for significant extra costs to fall on research funders and HEIs.

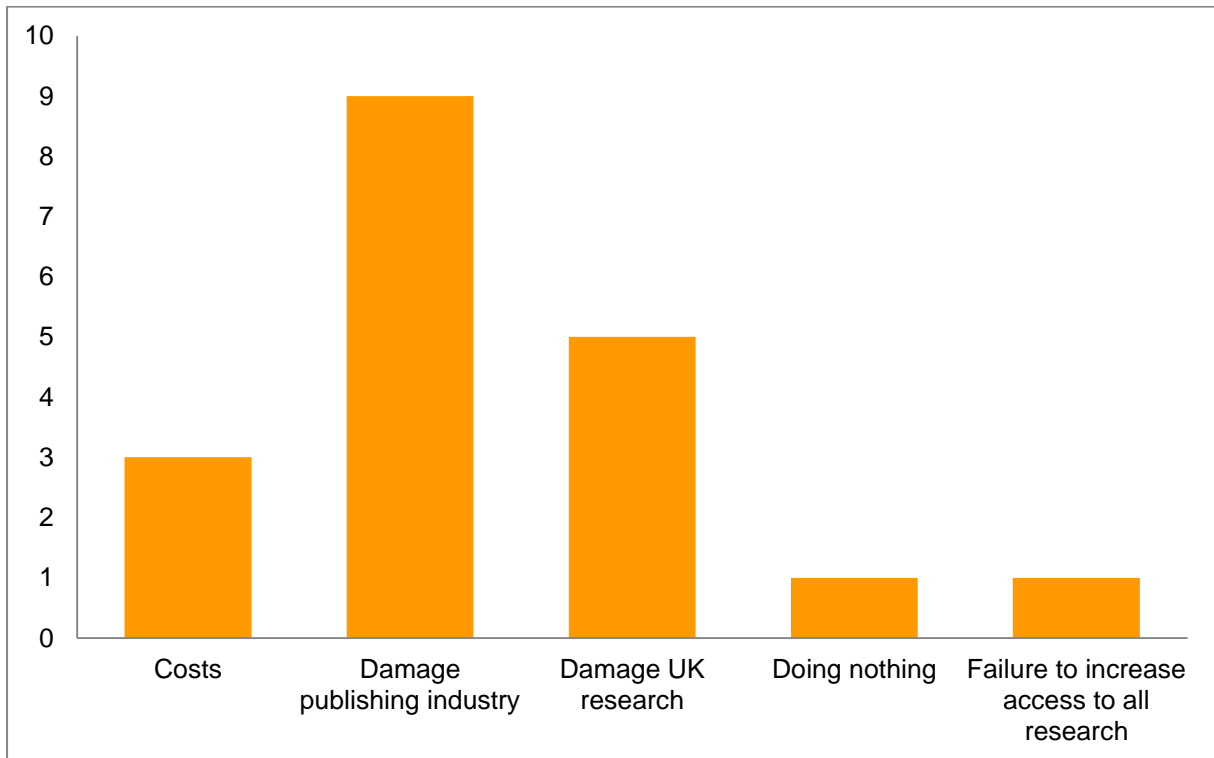


Figure 3 Finch Report risks identified

The Finch Report not only displays uneven distribution of risks among the stakeholders but also the uneven distribution of the responsibility for implementing the recommendations.

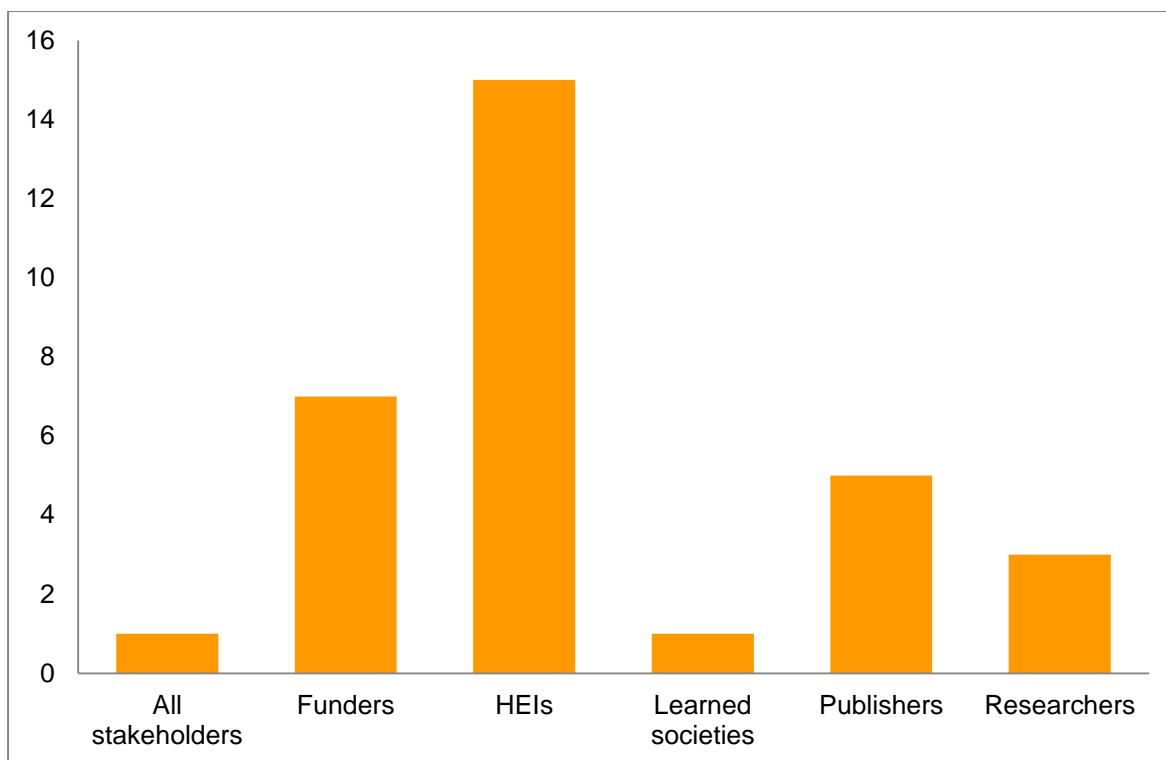


Figure 4 Finch Report stakeholder requirements

Figure 4 shows the distribution of the actions required of the stakeholders arising out of the recommendations of the Finch Report. This figure shows that by far the biggest weight of responsibility is on HEIs (particularly when you consider that researchers generally work in HEIs). Many of the requirements for HEIs are around creating their own Open Access policies beyond anything required by funders. This includes a recommendation for HEIs to create their own funds to pay APCs (Finch, 2012, p. 107) and one to further develop their repositories (Finch, 2012, p. 96). Many of the requirements for HEIs are to resolve difficult implementation problems, such as how to deal with lower quality articles and how to support publication of research by early career researchers (Finch, 2012, p. 108).

Though mentions of funder requirement are less numerous, they are fundamental to achieving the aims of the Finch Report, specifically in the relation to the RCUK Open Access policy as considered in this study. The primary recommendation for funders and, specifically, RCUK is to create a fund to pay APCs that HEIs could use flexibly (Finch, 2012, p. 76). The publishers are primarily required to cooperate with the other stakeholders and to address issues with licences and find ways to increase reuse (Finch, 2012, p. 110). Learned societies are advised to ‘consider how best to

fund their scholarly and other activities’ (Finch, 2012, p. 110). Researchers are required to take the cost of publishing into account in their publishing decisions (Finch, 2012, p. 107). This distribution of responsibilities suggests that any future measurement of indicators of success would need to focus on the activity of the HEIs.

4.1.2 Finch Report aims

Fundamental to the purpose of the Finch Report are the actual recommendations. These are summarised in Table 4. They are divided in the report into four categories: access, costs and sustainability, quality and usability. The primary aims are those related to access, as the main reason for the existence of the committee, and the production of the report was ‘to identify key goals and guiding principles in a period of transition towards wider access’ (Finch, 2012, p. 4). However, the auxiliary aims are also frequently mentioned throughout the report.

Access	Costs and sustainability	Quality	Usability
All publicly funded UK research accessible to anyone	Remove money as a barrier to access to research	Do not disrupt scholarly communications ecology	Allow reuse
HE and research communities in the UK have access to worldwide research findings	Shift from reader to author pays	Support innovation	Increase usability
Speed up transition to Open Access			

Table 4 Finch Report stated aims

The four main category of aim are expressly stated within the report, and the aims are stated throughout. The primary aim is to precipitate a move from the subscription payment model a pay-to-publish model, for the purposes of making all UK research outputs accessible to anyone. The desire to bring about substantial change to the mechanisms of scholarly communications is also evident in the desire to see innovation, to increase usability of research and to facilitate reuse. These are radical aims, and yet they are tempered by the aims not to disrupt the ecology of the publishing system and to keep the costs sustainable.

There is some discussion throughout the report about what achieving the stated aims would actually look like. These success criteria are shown in Table 5.

Stated success criteria
More access to UK research
More world publications available in UK
More world research available to other sectors
Financial sustainability for publishing
Affordability for research funders
Affordability for HEIs
Sustained high-quality research
High quality service for readers

Table 5 Finch Report success criteria

These are all quite difficult to measure, and each would require multiple indicators to be used to assess whether they have been achieved or not. The Finch Report does not provide many concrete indicators to assess the impact of the proposed recommendations. The ones that are detailed are listed in Table 6.

Stated measures
Average APC paid in the UK
Expenditure on APCs
Expenditure on subscriptions
Number of papers in repositories
Proportion of overseas publications published OA
Proportion of UK research published OA
Switch from subscriptions to APCs

Table 6 Finch Report stated measurement criteria

The fact that four of the seven indicators are related to financial measures is consistent with the emphasis on the importance of managing costs that is evident throughout the report. The concept of balancing costs and benefits can be identified in the description of the remit of the Finch Committee and report.

In seeking to fulfil the remit passed to us, we have focused on measures to speed process of transition to wider access, and on how to achieve that in a sustainable way. For we are clear that, however it is done, communicating research costs money, and that judgements about the most appropriate channels and mechanisms for increasing access are in part judgements about costs and benefits; and about who meets the costs and how (Finch, 2012, p. 17).

Sustainability is frequently mentioned throughout the report in relation to cost. However, there is some ambiguity about what this actually means. There is a conflict between what is sustainable for the different stakeholders, in particular HEIs and publishers. This means that it is difficult to know what success would look like in assessment of these financial indicators. Success for the HEIs would be a reduction

in subscriptions and a low average APC, for instance, where the opposite would be true for the publishers.

Of the measurable criteria listed in the Finch Report, only the number of papers in repositories and the proportion of UK research published Open Access can actually be seen to contribute to an assessment of whether any progress has been made towards achieving the stated success criteria.

Monitoring is mentioned on several occasions throughout the report, but little information is provided about how these measurable indicators will actually be measured. The primary recommendation about this shows that the indicators were not determined.

The precise configuration of the indicators, and the methodologies for gathering and analysing them, should be agreed between publishers, funding bodies, and representatives of the research community. But there will be need for co-ordination, starting with the identification of a neutral body which can work in the public interest, with the confidence of all parties and at minimal cost to gather and analyse the data. JISC may have a role to play here (Finch, 2012, p. 111).

The recommendations of the Finch Report were dependent on the financial modelling detailed in the annex to the report, *Transition to the open road gold scenario modelling update*. The financial variables, or sensitivities, discussed in this report are detailed in Table 7. Measurement of the veracity of the assessment of these sensitivities is key to the assessment of the success of the recommendations, as deviation from the predictions has the possibility of leading to a wildly different outcome than predicted in the report.

Sensitivities
The level of article processing charge (APC)
The level of Gold uptake in the UK and globally
The level of Gold uptake in rest of world versus UK
The % of corresponding authors from the UK

Table 7 Finch Report cost modelling sensitivities

The average APC paid in the UK is a very important indicator because the assumptions of the modelling are highly dependent on this sensitivity. The report describes that 'If the average level of APCs were to be c£2,175, rather than £1,450 (i.e. 50% higher than the starting point for our analysis), the HE sector would face additional costs of £11m a year, on top of the £175m currently being spent on journals and providing access to them' (Finch, 2012, p. 73). The measurement of the

proportion of papers published Open Access in the UK and in the rest of the world are also important indicators of the financial implications of the implementations of the recommendations. This is because if the UK was to act alone in pursuing Gold Open Access, UK HEIs and funders would have to pay APCs and unchanged subscriptions because they would still be required to access the research output of the rest of the world. This possibility could drastically change the economic situation, 'where the UK is significantly ahead of the rest of the world in adopting publication in open access or hybrid journals, and with APCs on average at a higher rate, the additional cost to the HE sector could be over £70m a year' (Finch, 2012, p. 75). The sensitivity, '% of corresponding authors from the UK' is not specifically addressed by the stated measures. Although this variable does affect the cost of fulfilling the recommendations, unlike the other sensitivities, it is unlikely to change as a result of the recommendations.

4.2 The Burgess Review

The Burgess Review was commissioned by RCUK to investigate the implementation of the of the RCUK Open Access policy in the first sixteen months, from 1 April 2013 to 31 July 2014. The resulting report has two main points of interest with reference to evaluation of the RCUK Open Access policy. One is as an example of the existing evaluation mechanisms that have already been put in place. Consideration of this aspect of the Burgess Review allows an assessment of the suggested evaluation infrastructure. The second is that analysis of the Burgess Review is an opportunity to see how perceptions of the Finch Report recommendations have changed with the creation of a concrete policy and after two years had passed. This allows a reassessment of the importance of different aspects of the Open Access environment and the importance of different stakeholders.

Like the Finch Report, the Burgess Review does not seek to address the merit or otherwise of making research Open Access. This can be seen in the stated terms of the review.

It has been specifically noted that the review is not looking at the entirety of the open access landscape nor is it reopening questions around the desirability of open access publishing, nor the government's policy position on open access. Whilst there is still much debate on-going around open access, the review panel has strictly limited its remit to the implementation of the RCUK policy (Burgess, 2015, p. 6).

4.2.1 Evaluation in the Burgess Review

The Burgess Review collected a range of data about the first sixteen months of the implementation of the RCUK Open Access policy. This included the actual compliance data as well as descriptive reports about the experiences of implementation of the policy. The information collected in the review can be seen in Tables 8 and 9.

Evidence collected	Detail
Effectiveness and impact of transition of RCUK to OA	From higher education institutions and independent research organisations
	From different disciplines
	From learned societies
	From academic publishers
	About collaborations between researchers both within the UK and internationally
	About internal processes within HEIs and IROs and the practicalities of administering the RCUK block grant to support open access
	About the wider open access landscape in the UK and internationally
	About the cost of open access publishing
Compliance with embargo periods	
Impact of CC-BY	
Effectiveness of communication	

Table 8 Burgess Review evidence

The evidence collected as part of the Burgess Review is primarily concerned with the effectiveness of the RCUK Open Access policy. The data was collected from a number of the main stakeholders identified in the Finch Report.

Compliance data collected
Total RCUK papers
Total Gold and total Green
Number of papers in non-compliant journals

Table 9 Burgess Review compliance data collected

The compliance data collected by the Burgess Review can be seen to echo the stated measures seen in the Finch Report (Table 6) to some extent, although the data are more limited. There is no consideration of the financial measures of success presented in the Finch Report. The difficulties faced by HEIs in collecting even this limited data are acknowledged in the Burgess Review, 'many did not have the

systems in place to either track publications produced by their own research staff or to associate publications with specific grants' (Burgess, 2015, p. 9).

4.2.2 Burgess Review recommendations

The Burgess Review set out a number of recommendations for the future implementation of the RCUK Open Access policy. The distribution of these recommendations reveals the Burgess Review view on where the responsibilities lie for improving the effectiveness of the RCUK Open Access policy and can be seen in Figure 5.

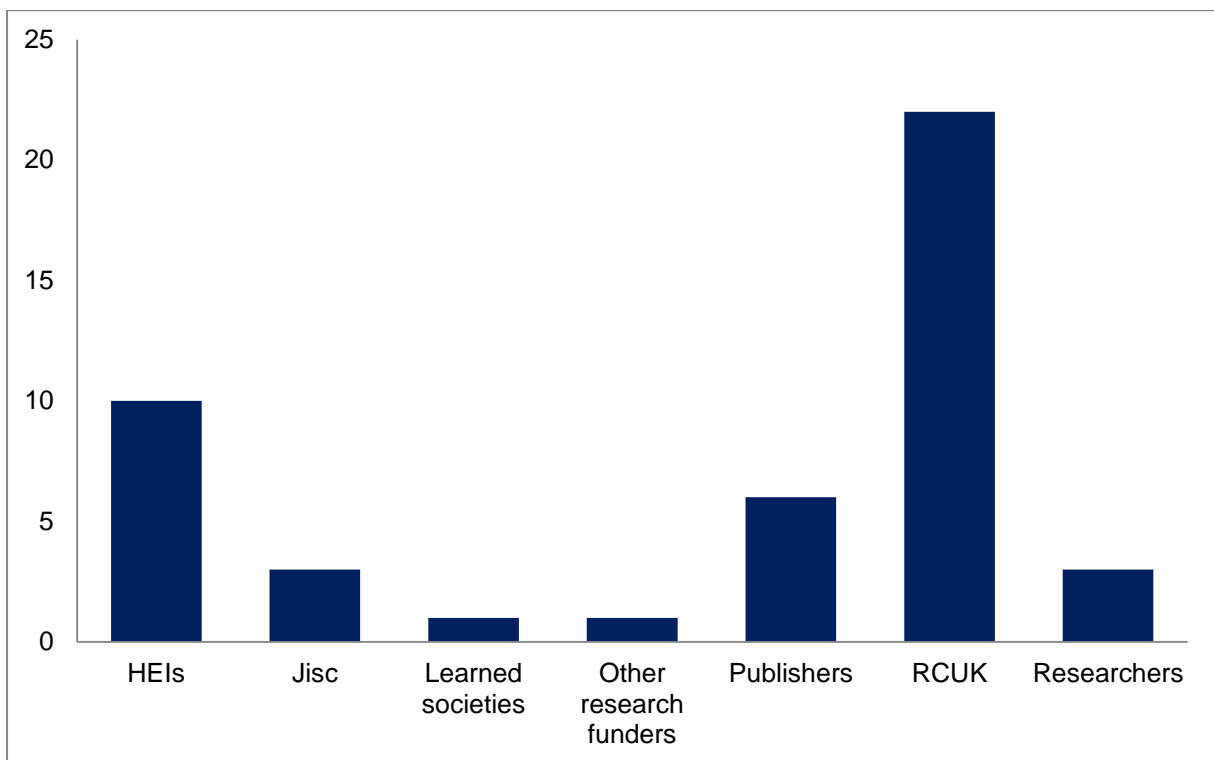


Figure 5 Burgess Review recommendations by stakeholder

The stakeholders involved in the implementation are shown to be largely unchanged from those identified by the Finch report, but there is a potential difference in the extent to which they would need to be involved in an evaluation. The only new stakeholder is Jisc, and they are revealed to be a key part of future evaluation. The recommendations concerning Jisc relate to the potential for them to improve ease and consistency of data collection across HEIs.

When Figure 5 is compared Figure 4, it can be seen that there has been a shift in responsibility for implementing the recommendations. In the Burgess Review, the

onus of responsibility has been transferred much more to funders (RCUK). There is still a lot of emphasis on HEIs but much more on funders than can be seen in the Finch Report. Though RCUK would be the organisation that needs to assess the effectiveness of the policy, this suggests that in an implementation based evaluation, the activities of RCUK itself need to be assessed.

As in the Finch Report, researchers are not the main focus of the Burgess Review recommendations. There is some attention paid to the concerns of researchers raised in the review, specifically around embargo periods, with the report recognising that 'The consensus among the research community is that short embargo periods, particularly in the arts, humanities and social sciences, could restrict academic freedom for authors to choose the best journal for publishing their work' (Burgess, 2015, p. 17). The Burgess Review also recognised researcher concerns with regards to licences stating, 'The written and oral evidence has shown that this is still an area of concern especially within the arts, humanities and social sciences' (Burgess, 2015, p. 18). Although these concerns are taken into account in the review, the recommendations connected to them stop short of suggesting changes to the policy and simply advise that they are considered or better communicated by RCUK. The full list of recommendations from the Burgess Review can be seen in Table 10.

These recommendations reveal a difference in emphasis to the Finch Report; most of these concerns were hardly touched upon. All of the recommendations that arose from the Burgess Review relate to problems with the implementation of the RCUK Open Access policy, some of which, at least, could have been identified as potential risks. The comparison to the risks identified in the Finch Report shown in Figure 3 shows that the strong focus on the financial risk to publishers and the sustainability of the scholarly communication industry evident in the Finch Report is not seen at all in the Burgess Review. In fact, there is implicit reference to the reverse concern of publishers making too much money from APCs instead.

Although beyond the scope of this review, the panel noted that further transparency on what is being paid in APCs by institutions to publishers will be crucial in helping to change behaviours and ease the transition towards open access (Burgess, 2015, p. 11).

Compliance monitoring
<ul style="list-style-type: none"> • Produce compliance template and guidance • HEIs and Jisc make template consistent • Explore ways of collecting data • RCUK mandate use of ORCID identifiers • Publishers accommodate ORCID and FundRef into submission systems • Institutions develop systems to accommodate ORCID and FundRef • Discussions to prevent duplication of effort • Light touch monitoring of RCUK spending • RCUK think about monographs
Communication
<ul style="list-style-type: none"> • Communication about the policy between all parties • Communication with HEIs about how different Open Access policies work together • RCUK allow exceptions to the policy • Communication with researchers about mixed model and freedom • Create working group
Embargoes
<ul style="list-style-type: none"> • RCUK return to lengths of embargoes • RCUK work with researchers and HEIs when RCUK revise guidance
Licences
<ul style="list-style-type: none"> • Work on making non CC-BY content CC-BY • RCUK be more clear about CC-BY in the policy • Publishers default to correct licence • Work with researchers to explain licences • Keep licence recommendations under review
Administrative effort and costs
<ul style="list-style-type: none"> • Interested parties investigate administrative costs further • Publishers standardise terminology • RCUK be clearer about collaborations • RCUK give more guidance about using the block grant
Block grant
<ul style="list-style-type: none"> • RCUK incentivise Open Access in less research intensive institutions • Explore disciplinary equity • RCUK update the way of allocating the grant • RCUK make sure that enough money is allocated in total

Table 10 Burgess Review recommendations

The mismatch between the potential risks identified by the Finch Report and the actual problems identified by the Burgess Review and reflected in the recommendations in part demonstrates the contrasting macro and micro framing of the two reports. However, the outcome of the Burgess Review also highlights the importance and potential difficulties of implementation in a way that it is not addressed at all in the Finch Report.

One of the main challenges of the implementation of the RCUK policy identified in the Burgess Review that is not referred to in the Finch Report is 'administrative effort and costs'. The Burgess Review states, 'One of the most consistently reported issues from HEIs in implementing the policy was the amount of administrative effort and cost taken to set up internal policies, processes and procedures' (Burgess, 2015, p. 21). In addition to the reports of HEIs, the Burgess Review was informed by the results of a survey that was done in the first year of the implementation of the RCUK Open Access policy, *Counting the Costs of Open Access* (Research Consulting et al., 2014), which identified the significant costs associated with administering Open Access requirements, the majority of which are borne by HEI libraries.

The recommendations relating to the block grant demonstrate a concern with equity that is not evident in the Finch Report. The Finch Report discusses inequality of access to research outputs between different types of institutions (Finch, 2012, p. 14) but with no sense that the recommendation for funders to create funds for Open Access could further entrench inequalities. This potential for inequity is addressed in the Burgess Review.

From the written and oral evidence, it was clear that those institutions which did not receive any block grant felt that this was detrimental to their implementation of the policy. Some of the written submissions highlighted the emergence of a two-tier system (Burgess, 2015, p. 25).

The recommendations demonstrate the need to assess the possibility of unequal access to Open Access funding between institutions and between academic disciplines.

The implementation recommendations concerning communication, for the most part, reflect the difficulties in engaging the researchers themselves in some aspects of the RCUK Open Access policy. The distribution of stakeholder recommendations shown in Figure 5 suggests that researchers are comparatively unimportant as stakeholders to the implementation of the RCUK policy, but the actual recommendations around improving communication to researchers suggest that they are more important than either report specifies.

By far the most recommendations from the Burgess Review relate to compliance monitoring, which is very important to an assessment of the possibility of evaluation

of the RCUK Open Access policy. This is because the compliance monitoring mechanism requested by RCUK and enacted by HEIs is one of the only concrete evaluation processes already put in place. However, compliance monitoring and reporting are mentioned in the Burgess Review, not just in the context of assessing the actual compliance, but in the context of the difficulties associated with collecting this data. Many institutions reported that collecting compliance information was ‘a difficult, resource-intensive task’ (Burgess, 2015, p. 9). This demonstrates the risk in monitoring and evaluation of policies such as this, where the act of monitoring is a significant drain on resources and risks the success of implementation of the policy itself.

4.3 Summary

Both the Finch Report and the Burgess Review identify very similar stakeholders, with Jisc being identified as more of a key player in the Burgess Review in the delivery and assessment of the policy. Both reports identify HEIs as fundamental to implementation of Open Access requirements, but the Burgess Review has many more recommendations for the funder, namely RCUK.

There are similarities between the Finch Report and the recommendations of Burgess Review, such as the concerns around embargoes and licences. Both are mentioned on several occasions in the Finch Report and the Burgess Review. Both of these areas reflect concerns of researchers and publishers and are connected to the concept of academic freedom. Nevertheless, the balance of risks is different in the Burgess Review, with a shift away from concern around damage to publisher profits to a recommendation to monitor APC payments to ensure that they do not become excessive.

The Burgess Review identifies some ways in which the RCUK Open Access policy has been evaluated and offers further suggestions about how this can be extended in the future. However, in order to measure the success criteria as stated in the Finch Report, it would be necessary to go beyond the recommendations of the Burgess Review. This would need to be balanced, however, against the extra burden that increased monitoring and measuring would create, particularly for HEIs, who already have to accommodate a significant level of administrative effort to administer the policy.

Cooperation between the multiple stakeholders is emphasised throughout both reports. This is explicitly mentioned on multiple occasions throughout the Finch Report and is implicit in many of the Burgess Review recommendations, which require the participation of multiple groups. This points to one of the reasons for evaluation of the recommendations in addition to simply measuring success. The Finch Report makes clear that this is also necessary to maintain trust between the parties involved.

In order to sustain the confidence of all parties and stakeholders, it will be important during this process to gather reliable, high-quality indicators on the key features of the changing landscape, relating, for example, to costs, the take-up of different publishing strategies and their outcomes, and the return on public funding (Finch, 2012, p. 111)

5 Discussion

The aims presented in the Finch Report and the recommendations of the Burgess Review demonstrate a desire for a positive outcome for all the stakeholders involved in scholarly communication. Some of these, however, are directly in conflict, primarily those related to economic sustainability for publishers on one hand and HEIs and funders on the other. The ability of publishers and learned societies to protect their revenues, in particular, is emphasised as an aim of the recommendations of the Finch Report, which is potentially in conflict with the core aim of increasing access to research.

5.1 Evaluation for a plurality of stakeholders

In order to manage these conflicts, the pluralistic approach to evaluation espoused by Smith and Cantley (1985) must be employed. This framework is useful because of the ability to incorporate multiple versions of success. This has the advantage of coming closer to an objective, albeit untidy, conclusion; a pluralistic approach means that processes are considered along with outcomes and that stakeholders are more likely to feel that their views have been represented (Nevile, 2013).

Palfrey *et al.* (2012) discuss incorporating the concerns of multiple stakeholders into an evaluation and the fact that all stakeholders will have a different profile of concerns. They provide a template for a number of potential concerns, a specifically adapted version to consider the RCUK Open Access policy can be found in Table 11.

Stakeholders								
Criteria	Research funders (RCUK)	Higher Education Institutes	Libraries	Non-academic research consumers	Learned societies	Publishers	Academics researcher producers	Academic research consumers
Effectiveness	*	*	*	*				*
Efficiency	*	*	*		*	*	*	
Economy	*	*	*		*	*		
Equity		*	*				*	
Acceptability	*	*	*		*	*		
Accessibility	*	*	*				*	
Appropriateness	*			*				*
Responsiveness	*							
Accountability	*	*	*		*	*		
Ethical considerations	*			*			*	*
Choice		*			*	*	*	

Table 11 Stakeholder concerns. Adapted from (Palfrey et al., 2012, p. 114)

The range of stakeholder concerns shown in Table 11 cannot be entirely represented in one single evaluation. The evaluations would require some element of the process and outcome focus observed in the existing Open Access literature but require the more nuanced use of formative and summative evaluation discussed by Chen (1996) to break down the divide between evaluating the processes and the outcomes (see Figure 1). Much of the evaluation of the RCUK Open Access policy so far has focused on process evaluation. Although this does allow for an assessment of the overall success of the policy, the implementation is a significant factor in the overall success or otherwise of the policy; it cannot reveal everything about the outcomes. Therefore, a combination of process and outcome evaluation would be required to assess the costs and benefits of the policy.

The evaluation of the RCUK Open Access policy that has already occurred, the activity leading up to the Burgess Review, was firmly focused on process-improvement evaluation. This form of evaluation is particularly useful for the stakeholders directly involved in the implementation of a programme, in this case, the HEIs, particularly libraries and the publishers. The many recommendations relating to RCUK that arose out of this review suggest that they too need to be involved in the process-improvement evaluation, not just as the funder of the policy, but as an active participant in the implementation.

Process-assessment evaluation is also of interest to the stakeholders involved in the implementation of the RCUK Open Access policy and would be designed to discover whether the implementation has been successful or not. This has not been considered in the review that has already taken place but would be facilitated by the data that the Burgess Review recommended should be collected. A process-assessment evaluation is particularly important for this policy, because of the revelations of the *Counting the Costs of Open Access* report (2014). This suggested that the administration of APCs cost almost the same amount as was spent on the APCs themselves. This has a direct impact on the ability of the policy to actually meet the aims described in the Finch Report.

Outcome-improvement evaluation concerns an assessment of whether the programme is actually achieving its goals, without an overall assessment of the worth of the intervention. This type of evaluation would be most significant to RCUK

as an assessment of whether their policy is the most successful way of achieving the aim of increasing access to UK research. This would require an element of cost benefit analysis. This is particularly pertinent to the RCUK Open Access policy because of the possibility of compliance through the gold or the green routes to Open Access. These two routes have different economic implications and potentially different levels of effectiveness. An evaluation of the costs and benefits of the two different routes in the context of the RCUK policy could be very illuminating in terms of assessing the value for money for each route. This would be of interest to RCUK in determining the most effective use of their investment in Open Access as well as to the other stakeholders participating in scholarly communications trying to determine how access to research can be increased in an affordable way.

The Finch Report and the Burgess Review make clear that they are not concerned with whether or not Open Access is a good thing for scholarly communication, and therefore, the outcome-assessment evaluation is not a type of evaluation that would seem to be a goal of the success criteria stated in the Finch Report. The Finch Report does not present government or tax payers as stakeholders, and therefore, the appropriateness of spending government money for the purpose of increasing access to research is not something that would make up an evaluation in the terms of the Finch Report itself. From the point of view of RCUK, an outcome-assessment evaluation would include some assessment of the opportunity costs of devoting part of their budget to Open Access as opposed to spending this money on funding research itself. There is no sense from the Burgess Review that this is a concern for RCUK, so this would not be an important evaluation structure for RCUK.

5.1.1 Carrying out a process-assessment or process-outcome evaluation

The focus on the implementation of the RCUK Open Access policy and the improvement of this implementation in the Burgess Review most closely maps to a process-improvement evaluation. It is an uncontroversial stance as it is in everyone's interests to make processes more efficient. The time devoted to implementation is costly to all parties, and no-one would object to reducing this burden.

The recommendation in the Burgess Review for a fuller look at the costs of administration should go some way to contributing to a process-assessment evaluation but would need a decision by RCUK about whether the results should

actually lead to an adjustment of the processes required to implement and comply with the policy. The stakeholders for these process focussed evaluations are shown in Table 12.

Evaluation type	Interested stakeholders	Metrics
Process-assessment	HEIs (libraries in particular), publishers, RCUK	<ul style="list-style-type: none"> • Time spent by libraries and publishers on administering Open Access papers • Identification of inefficient parts of processes
Process-outcome	RCUK	<ul style="list-style-type: none"> • Proportion of block grant spent on administration • Proportion of block grant spent on APCs • Proportion of RCUK funded papers made Open Access

Table 12 Process evaluation for RCUK Open Access policy

5.1.2 Carrying out an outcome-improvement evaluation

An outcome-improvement evaluation would be a powerful tool for uncovering the consequences of the UK approach to Open Access development and would be the best way of working out whether the aims of the Finch Report have been achieved at all, and whether they have been achieved in the most efficient way.

An outcome-improvement evaluation has not yet been carried out, so there has been no assessment of what actually works in delivering the aims of the policy. This kind of assessment is crucial to determining the best way to achieve the maximum access to UK research for the minimum cost. As such it would be useful to RCUK and to participating HEIs, but there would be much wider use for advocates of Open Access all over the world.

An outcome-improvement evaluation could draw heavily on the existing and future data from process-assessment and process-outcome evaluations. Chen and Rossi (1983) discuss the importance of assessing implementation to evaluate programmes. Without the focus on implementation seen in process evaluations, it is impossible to tell whether any failure is due to a failure of the intervention or of the implementation.

This type of evaluation would not require much additional data above what is already being collected or that there are plans to collect. Therefore, carrying out an outcome-

improvement evaluation would primarily require a new analysis of the existing data. The clear recommendation of both the Finch Report and the Burgess Review was that the majority of the data collection for monitoring open access developments was the responsibility of the HEIs (with the assistance of Jisc). This provides both opportunities and risks for analysis because of the large number of variables introduced by the different approach of each HEI. The large number of variables at play would have the potential to undermine the validity of any conclusion. This is the justification of a randomised controlled trial approach to evaluation, but that would not be appropriate in this case in part because it would be impossible to achieve and in part because it would not offer an explanation of the mechanism for any observed differences. The problem of the complex web of variables is best addressed by use of a theory and model for the mechanisms affecting the policy, such as the one proposed by Chen and Rossi (1983) and shown in Figure 8.

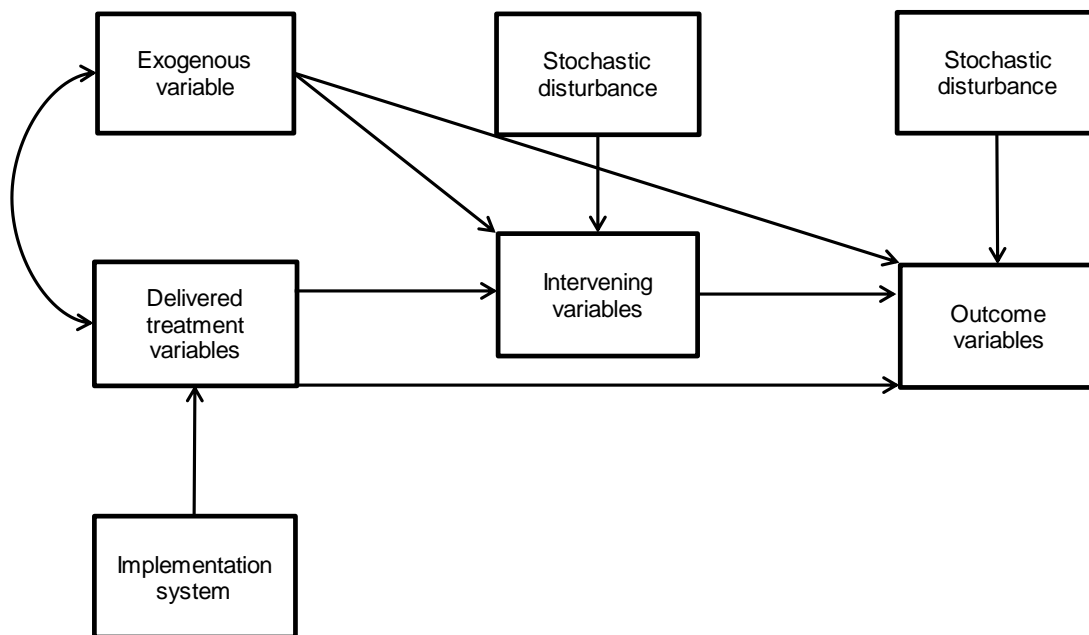


Figure 6 Evaluation theory. Adapted from (Chen & Rossi, 1983, p. 287)

The purpose of the approach suggested by Chen and Rossi is to reveal the mechanism by which the programme is succeeding or failing. This model separates the various types of variable to determine which are causing the intended or unintended consequences.

Delivered treatment variables

The 'delivered treatment variable' is the programme intervention. It is important that this assesses the actual rather than the proposed intervention.

Intervening variables

The 'intervening variables' are variables that may or may not be present but interact with the 'delivered treatment variable'.

Exogenous variables

The 'exogenous variables' are variables that may or may not be correlated with the other variables. These may have a direct or indirect impact on the 'outcome variables' and, therefore, must be considered in the analysis. The randomised controlled trial is a means of controlling for these 'exogenous variables', but that means that you have no explanation for how these variables affect outcomes.

Stochastic disturbances

The 'stochastic disturbances' are variables that are independent of the 'exogenous variables' but can nevertheless affect the outcomes.

Outcome variables

The 'outcome variables' are the intended and unintended consequences of the program: the consequences of the specific 'delivered treatment variables' and the influence of 'intervening variables'.

It would be complicated to carry out an outcome-improvement evaluation, but the data-collection should not be a barrier. Such an evaluation could be carried out by making use of the data that is already being collected by or is known by HEIs with some additional information, such as the costs around administration that the Burgess Review recommended be collected (Burgess, 2015, p. 28). The variables that would be available from this accumulated data are listed in Table 13.

All of these potential variables could occupy multiple locations in the model illustrated in Figure 8, and this could reveal the mechanism by which the variable under consideration affected the success of the policy outcomes. This theory could be used to unravel the multiple variables that could be used to model the multiplicity of potentially significant variables.

Costs	Access achieved
Total spent on APCs	Total papers made Gold Open Access
Total spent administering APC payments (Gold Open Access)	Total papers made Green Open Access
Total spent administering Green Open Access	Total papers made Open Access
Total spent on advocacy activities	Total RCUK papers published
Average APC	Proportion of RCUK papers made Open Access
Total spent on subscriptions	
Proportion of costs met by RCUK grant	
Proportion of costs met by HEI	
Total RCUK block grant awarded	

Table 13 Evaluation variables from existing or proposed data

The possibilities for creating multiple models of the effect of the RCUK Open Access policy by moving the potential variables in Table 13 into different positions in the model in Figure 8 creates many possibilities for determining the factors leading to a successful or unsuccessful outcome. The challenge of this approach, therefore, would be limiting the focus to the combination of variables that would be most enlightening. This approach would, however, allow a great degree of flexibility to consider the evaluation from a range of perspectives and at both a macro and micro scale. Some of these possibilities are listed below.

5.1.2.1 Macro policy success or failure

If the 'delivered treatment variables' in the model were the requirement that all peer-reviewed research papers acknowledging funding from one of the UK Research Councils must be made Open Access, the 'outcome variable' could be the proportion of RCUK funded papers that were made Open Access. The 'intervening variable' could be the relative proportion of Gold and Green open access. This could allow for a simple metric of the cost to RCUK of each Open Access paper and expanded to assess the cost per Green Open Access paper and the cost per Gold Open Access paper.

5.1.2.2 Equity

By considering the actual level of block grant awarded to HEIs as the 'deliverable variable', it would be possible to address the question of equity raised in the Burgess Review arising from the fact that HEIs received different amounts of financial assistance from RCUK. The participating HEIs could be split into several bands according to the level of funding they received from RCUK, and an assessment

could be made of the proportion of RCUK papers that were made Open Access to see if the level of funding affected this 'outcome variable'. In such an analysis, there would need to be careful consideration of 'exogenous variables' such as the average APC to take into account the potential for different publishing locations, with associated differences in cost affecting these outcomes.

5.1.2.3 *Financial sustainability*

The Finch Report made very clear that financial sustainability is fundamental to the successful implementation of the recommendations. Much of the emphasis in the Finch Report was on protecting the publishing industry, with a greater emphasis in the Burgess Review on publisher costs being too high. The model in Figure 8 could be used to determine if either situation was a concern. Both these scenarios would be unintended 'outcome variables' and could be assessed by considering the amount paid for APCs as an 'intervening variable' and the amount paid in subscriptions as an 'exogenous variable'.

5.1.2.4 *Micro policy success or failure*

The same method of assessment as the macro evaluation of the number of RCUK papers that were made Open Access could be used for a micro look at the success of individual HEIs. This could be used by RCUK to identify which of the different approaches of the HEIs resulted in the most papers being made Open Access for the least amount of money. In this kind of assessment, the 'intervening variables' would be factors like the amount of money invested in the process by the HEI in addition to RCUK or the amount of money spent on advocacy. Such an analysis would allow RCUK to make recommendations to HEIs about how to bring about the most successful outcome.

This sort of analysis would also be of use to the HEIs themselves and could feed back into a process-assessment evaluation at a micro or macro level as the differences in implementation could be used to assess the ultimate suitability of certain implementation processes.

5.1.3 *Evaluation challenges*

Although an outcome-improvement evaluation could be carried out using existing or already proposed data, there are some challenges of trying to carry out any sort of evaluation.

5.1.3.1 Accuracy

The Burgess Review reported on the compliance data collected by HEIs but emphasised stated uncertainty about the accuracy of this data (Burgess, 2015, p. 9). Many HEIs raised doubts about the accuracy of their own data, particularly with reference to the total number of RCUK funded papers being published in their institution. There is the possibility for persistent identifier services such as FundRef and ORCID to be of help here, but at present the conclusions of any evaluation would be severely weakened by poor quality compliance data.

5.1.3.2 Cost

Even if carrying out an outcome-improvement evaluation did not lead to additional data collection costs, the Burgess Review notes there is already an additional resource burden of monitoring compliance with the RCUK Open Access policy. Any evaluation that had a significant impact on the resources available to actually implement the policy would be problematic. Where possible, the data required for evaluation should be collected with little need for manual intervention or using data that already exists. Jisc were identified as key players in the Burgess Review in a way they were not in the Finch Report, and they are central to aggregating and minimising the burden on HEIs. This is a very important part of making full evaluation of the policy viable.

5.2 Would such an evaluation address the concerns and gaps in the Open Access literature?

The vast number of variables intrinsic to the RCUK Open Access policy is what makes the evaluation challenging but is one of the most significant aspects of the wider usefulness of such an evaluation. The fact that the policy allows the choice of both Gold and Green Open Access immediately allows assessment of which of these approaches leads to better outcomes. Add to this the variety of approaches taken by the multiple HEIs charged with implementing the policy, and any process focused and outcome-improvement evaluations would be a very rich source of real world data to analyse the outcomes of different approaches to administration of an Open Access policy.

Such evaluations could prove useful in providing more concrete assessments of the actual costs of providing Open Access. This is particularly important to the key

players directly affected by these costs: the HEIs (and their libraries), the funders and the publishers. Evaluations of the RCUK Open Access policy could greatly aid evidence-based decision making by these parties.

HEIs are rarely specifically addressed in the literature. Many concerns overlap with the consistent parts, for example, they also care about citations and are concerned with the potential journal subscription savings. On the other side, the costs of APCs and administering OA for their libraries and researchers are also paid by HEIs. Given the large part that HEIs (and their libraries) play in implementing and monitoring the RCUK Open Access policy, a specific evaluation of the effect of the recommendations on HEIs would add significantly to a gap in the current literature.

Without carrying out an outcome-assessment evaluation, an evaluation would not be able to answer questions about whether Open Access is beneficial for all or any of the stakeholders and whether it is worth the costs. To answer these questions it would be necessary to assess the effect of openly accessible research on the information users who would not otherwise have access to it. These are questions that still need to be answered but are not possible within the framework of the recommendations of the Finch Report.

6 Conclusion

The premise of this study was to discover whether it would be possible to carry out an evaluation of the RCUK Open Access policy in the terms set out in the Finch Report, but there are two limitations to this premise. Firstly, it is necessary to consider not a single evaluation but multiple evaluations. There are many different stakeholders involved in the RCUK Open Access policy, and one evaluation alone would not cover all the dimensions and standpoints of these many parties. Secondly, the situation has developed beyond what was discussed in the Finch Report. The Burgess Review revealed that the conditions had changed, and more recent publications show that the situation has developed further. In February 2016 the report *Open access to research publications: independent advice* (Tickell, 2016) was published to make recommendations about the continued support for Open Access for the incoming government. This makes more explicit the concerns first seen in the Burgess Review about the inflating costs of publication as a result of Open Access.

The methods of evaluation discussed in this dissertation would go a long way to identifying whether the RCUK Open Access policy was achieving the objectives set out in the Finch Report and would reveal where improvements could be made to optimise results. However, in order to discover whether Open Access actually has a positive impact you would need to actually try and determine how the research that was made freely available was actually used. This could only realistically be achieved by investigating the behaviour of key potential information users. Consideration of the RCUK Open Access policy in this way would have the potential to make a large contribution to knowledge about the use of scholarly research outside academia. The existing studies have a heavy bias towards medical research because of the nature of early adopters of Open Access policy like NIH and the Wellcome Trust. As RCUK is made up of seven research councils that cover all areas of academic research, there is the possibility to segment different users to assess the impact of Open Access on many different sectors. However, it would be very challenging and expensive to carry out this kind of research, even on a small scale. It would also necessitate some assessment of the opportunity costs of the Open Access policy for RCUK, namely what the money could achieve if it was spent on something other than Open Access.

The Finch Report and the resulting changes to the Open Access environment in the UK continue to be the source of discussion and assessment. The recent publication of the *Open access to research publications: independent advice* (Tickell, 2016) report demonstrates that the Open Access situation in the UK is not yet fixed and is not yet optimum, and thus, evaluation of the RCUK Open Access policy and the other recommendations of the Finch Report is still of importance to create a well-functioning scholarly communications environment. A full assessment of both the implementation and consequences would be a great opportunity to optimise access to research in the UK and would provide much needed evidence about Open Access for the whole world.

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