



Research article

Assessing the quality of the ecological component of English Environmental Statements

Katherine Drayson ^{a,*}, Graham Wood ^b, Stewart Thompson ^a^a *Spatial Ecology and Landuse Unit, Department of Biological and Medical Sciences, Faculty of Health & Life Sciences, Oxford Brookes University, Gypsy Lane, Oxford OX3 0BP, United Kingdom*^b *Department of Planning, Faculty of Technology, Design and Environment, Oxford Brookes University, Gypsy Lane, Oxford OX3 0BP, United Kingdom*

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ABSTRACT

Environmental Impact Assessment (EIA) is a key tool to help ensure sustainable built development in more than 200 countries worldwide. Ecology is frequently a component of EIA and early reviews of Ecological Impact Assessment (EclA) chapters identified scope for improvement at almost every stage of the EclA process, regardless of country. However, there have been no reviews of UK EclA chapters since 2000, despite important changes in biodiversity and planning legislation, policy and guidance. In addition, no UK EclA chapter reviews have attempted to assign a grade or score to EclA chapters (as has been done for reviews of US, Finnish and Indian EclA chapters). Furthermore, no EclA chapter reviews have attempted to use a scoring system to identify which variables determine EclA chapter information content, beyond straightforward comparisons of EclA chapters before and after the introduction of guidelines.

A variant of the Biodiversity Assessment Index (BAI) was used to assign scores between zero and one to EclA chapters based on a series of 47 questions drawn from EU legislation and professional guidance. 112 EclA chapters for proposed developments that were subsequently granted planning permission in England were assessed. The mean BAI score was less than 0.5, indicating the presence of considerable information gaps in the majority of EclA chapters.

Of 13 predictor variables identified as having the potential to affect EclA chapter quality, 10 were identified as significantly related to the BAI scores. A backward stepwise Generalized Linear Model identified the use of professional guidance, the ecological consultancy type and the length of the EclA chapter as having the greatest combined explanatory power. As a result, several recommendations are made to help improve future EclA chapter content, including formal EclA chapter review, publicising the professional guidance to consultants, the provision of training and the introduction of an accreditation scheme for consultants involved in EclA.

This approach could be replicated in other countries that conduct EIA. Context-dependent EclA chapter review criteria (as in this paper) would help to identify targeted recommendations for improvement. Alternatively, a global set of review criteria could highlight areas of best practice that could then be exported to other countries.

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1. Introduction

1.1. Environmental Impact Assessment

Environmental Impact Assessment (EIA) is legislated for, and/or

conducted in, approximately 200 countries worldwide (Morgan, 2012). Its main purpose is to assess the potential environmental impacts of a proposed built development in advance (Glasson, 1994). This enables competent planning authorities (CPAs) to weigh the potential economic benefits of a proposed development (such as employment) against its likely environmental impacts, before making an informed planning decision. As a result, EIA has the potential to aid sustainable development across the globe (Glasson, 1994), but questions remain as to its effectiveness (Cashmore et al., 2004).

* Corresponding author. Present address: Policy Exchange, 10 Storey's Gate, Westminster, London SW1P 3AY, United Kingdom.

E-mail addresses: katherinedrayson@aol.co.uk (K. Drayson), gjwood@brookes.ac.uk (G. Wood), sthompson@brookes.ac.uk (S. Thompson).

1.2. EIA effectiveness

EIA was introduced to the European Union (EU) in 1985 (Council of the European Union, 1985, as amended) and was transposed into UK legislation shortly afterwards (HMG, 1988). The documentary output of EIA is a report known as an Environmental Statement (ES). This report is submitted to the CPA and an outline chapter structure for a typical ES is provided in Fig. 1. The introductory, or 'front-end', chapters are followed by technical chapters (such as ecology and archaeology) and finally the concluding chapters.

Considerable research on EIA effectiveness was conducted in the 1990s and early 2000s. EIA effectiveness studies commonly focused on:

- procedural effectiveness (whether EIA conforms to established provisions and principles); and
- substantive effectiveness (whether the purpose of EIA is achieved) (Sadler, 1996).

There is a range of different measures to determine the substantive effectiveness of EIA, including its influence on design and consent decisions, and its contribution to institutional capacity development (Cashmore et al., 2004). This has yet to be explored in the context of EclA (see Section 4.3). To help determine changes over time, however, his paper focuses on procedural effectiveness. This has commonly been investigated through audits, for example of the documentary output of EIA/EclA and/or of the completed development. This study uses a novel analytical approach to assess the main drivers of EclA quality. The following sections describe the characteristics and results of document audits in EIA (Sections 1.2.1 and 1.2.2) and EclA (Section 1.2.3).

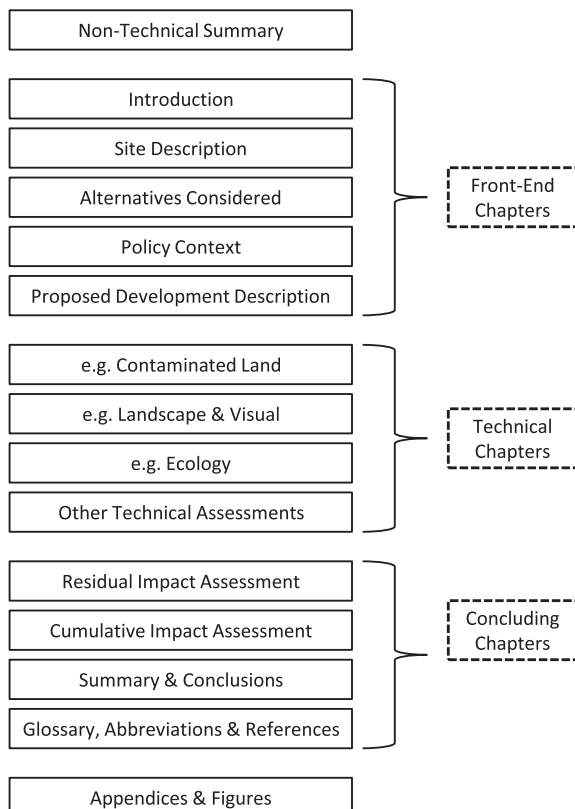


Fig. 1. Outline of a typical ES chapter structure.

1.2.1. Checklist-based audits of ESs

ES audits, or reviews, have tended to be accomplished by the use of checklists. Examples of commonly used checklist-based review packages include the European Commission's EIS Review Checklist (Environmental Resources Management, 2001) and the Environmental Statement Review Package (Lee and Colley, 1992), although bespoke checklists have also been produced (e.g. Bojórquez-Tapia and García, 1998; Ross, 1987). Whilst questionnaires, interviews and site visits may provide a higher level of detail and a richer context, checklist-based reviews tend to be relatively inexpensive and less time-consuming to conduct. In addition, they allow for detailed and systematic comparisons, and the empirical identification of patterns and trends.

Checklist-based reviews do, however, present several difficulties (Pöder and Lukki, 2011). For example, they may not include key aspects of ESs in their review criteria, such as the consideration of alternatives. In addition, the most commonly used review packages require score aggregation to provide a final grade: given the issue of inter-reviewer variability, aggregation can differ between individuals. Finally, the ordinal grading system of the most commonly used review packages means that the difference in quality between grades 'A' and 'B' may be greater than the difference between grades 'B' and 'C', making interpretation more open to challenge.

Nevertheless, checklist-based reviews remain an important (although they should not be the only) tool to evaluate EIA procedural effectiveness. For example, previous checklist-based reviews have highlighted numerous flaws and shortcomings in UK ESs. These have included poor consideration of complex and interactive impacts (Jones et al., 1991), presentation bias (Lee and Colley, 1991) and poor consideration of alternatives and monitoring provisions (Wood et al., 1996), although there are indications that ESs have improved over time (Glasson et al., 1997; Lee and Brown, 1992; Wood et al., 1996). Checklist-based reviews have also established that other countries, including other EU member states and Canada have also been found to produce ESs that require improvement (Barker and Wood, 1999; Lawrence, 1997). However, previous ES audits have conducted only cursory examinations of the variables potentially linked to ES quality (e.g. Oxford Brookes University Impact Assessment Unit, 1996), with no attempt to use statistical modelling to identify the key determinants of 'good' quality ESs.

1.2.2. Checklist-based reviews of ES technical chapters

Whilst checklist-based reviews of entire ESs are useful, their breadth can mask variability within and between individual technical chapters. Disaggregated studies of individual chapters can therefore provide richer detail (and potentially more targeted recommendations for improvement). For example, Badr et al. (2004) found that water impact assessment was conducted more poorly than EIA in general, and that water impact assessment quality was not as problematic as Ecological Impact Assessment (EclA). In addition, Glasson and Heaney (1993) found that socio-economic impact assessments were conducted particularly poorly in EIA.

1.2.3. Checklist-based reviews of ecological impact assessment chapters

Since the Convention on Biological Diversity in Rio de Janeiro (UNCED, 1992), there has been increasing recognition of the importance of biodiversity and ecology (UEBT, 2012). The EclA chapters of ESs for proposed developments in the UK have therefore been scrutinised several times, with six main studies having been published (Byron et al., 2000; RSPB, 1995; Spellerberg and Minshull, 1992; Thompson et al., 1997; Treweek and Thompson, 1997; Treweek et al., 1993). These early studies all conducted general thematic reviews (e.g. how well baseline data gathering was conducted, etc.), rather than systematically assessing EclA

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