



Land use planning and the ecosystem approach: An evaluation of case study planning frameworks against the Malawi Principles



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ABSTRACT

Global land use change continues to undermine the capacity of ecosystems to sustain ecosystem service (ES) flows. Much attention in policy and research has therefore been given to concepts, tools and processes for sustainable land use planning, including consideration of ES and the ecosystem approach. However, there are limited empirical cases or evaluations of ecosystem approach based planning from which lessons can be drawn. The aim of this research therefore was to identify and evaluate existing case study planning frameworks that have the potential to operationalise the ecosystem approach. Based on the Malawi Principles, a new suite of evaluation criteria was developed. This was used to assess case study documentary evidence and evaluate the extent to which the 12 Malawi Principles had been considered. The evaluation also assessed the planning methods/approaches used by the case studies and their potential to help translate the Malawi Principles into land use planning outcomes. Finally, a SWOT analysis was used to structure the main findings. Our results show that the Malawi Principles have been considered across the case studies “fully” or “partially” in 64% of instances suggesting, therefore, that the case studies present a reasonable interpretation of the ecosystem approach. However, poor consideration of biodiversity and environmental limits across the cases highlights the risk of land use management decisions continuing to contribute to the degradation of natural capital.

1. Introduction

Land use planning comprises multiple traditions and processes though it can be defined broadly as the allocation of land to different uses across a defined area in such a way that economic, social and environmental objectives are balanced (FAO, 2016). In the European Union (EU) for example, four major land use planning traditions have been defined (EC, 1997; Farinós Dasi et al., 2007) determined by the complex of historic, cultural and social factors in each territory (Schmitt et al., 2013). The scope and nature of a planning system determines its ability to affect land use change on the ground. In the EU, integrated systems that adopt formal hierarchies of plans linking national to local levels (e.g. Austria and Germany) are highly prescriptive whereas territories operating broad, regional economic planning based systems (e.g. France) pursue wider social and economic objectives in a less top-down fashion (EC, 1997; Farinós Dasi et al., 2007). The integration of multiple objectives in land use planning also requires coordination across sectors and interests (FAO, 2016) necessitating stakeholder and

public participation in planning processes (Bourgoin and Castella, 2011; NAFRI, 2012). Furthermore, the use of *ex-ante* assessments in land use planning, such as Strategic Environmental Assessment (SEA), can help planners and stakeholders to evaluate the likely impacts of their plans and provide a platform for participation activities (Geneletti, 2012).

Despite the plethora of land use planning policies and systems in operation globally (and in regions such as the EU), global land use change, whilst enabling humans to utilise the planet's resources as constituents of wellbeing, is undermining the capacity of ecosystems to sustain ecosystem service (ES) flows (Foley et al., 2005; Schröter et al., 2005; MA, 2005). In consequence, much attention has been given in policy and research to concepts, tools and processes for sustainable land use planning, including consideration of ES and the ecosystem approach (CBD SBSTTA, 2000; CBD Secretariat, 1998; Viglizzo et al., 2012; EC, 2013a; von Haaren et al., 2016). The ecosystem approach is cited as the primary framework for action under the Convention on Biological Diversity (CBD), defined as “a strategy for the integrated

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management of land, water and living resources that promotes sustainable use in an equitable way” (CBD SBSTTA, 2000). It has its origins in pre-existing management concepts such as ecosystem-based management and community-based conservation (Waylen et al., 2015a), however, its key innovation is combining the need to manage nature in terms of dynamic ecosystems whilst involving people in decision-making (Waylen et al., 2014, 2015b). The approach has also been mentioned in various government policies and supporting documents including in the UK where this research took place (Section 2); e.g. policies published by the Department for Environment, Food and Rural Affairs (e.g. Defra, 2007, 2011) and the Welsh and Scottish Governments (Welsh Government, 2011; Scottish Government, 2011, 2016).

Providing a structure for the approach, twelve principles were proposed and subsequently adopted as part of a workshop on the ecosystem approach held in Lilongwe, Malawi in 1998 (CBD Secretariat, 1998). The Malawi Principles (as they became known) are the tenets of the ecosystem approach, providing a framework for ecosystem managers and stakeholders (Table 3). Their generalised nature is such that they are relevant in a wide variety of planning and decision contexts where ecosystems may be impacted (Korn et al., 2003). This holds true for land use planning where decisions can affect ecosystems and ES flows in various ways and at multiple scales (Foley et al., 2005; Schröter et al., 2005; Geneletti, 2012). There may also be key areas of complementarity between good-practice land use planning and the Malawi Principles; e.g. promoting participatory processes, encouraging integrated approaches and using *ex-post* monitoring and evaluation to inform adaptive management (Waylen et al., 2014; , 2015b).

We suggest, therefore, that there is a clear rationale for adopting the ecosystem approach in land use planning and, specifically, using the Malawi Principles as a framework to guide planning and decision-making processes. Indeed, this is a requirement of policy in devolved nations in the UK: (1) the Scottish Land Use Strategy (LUS) embodies ecosystem approach principles (Scottish Government, 2011, 2016) and plays a formalised role in statutory planning (Phillips et al., 2014); and (2) the Environment (Wales) Act (2016) has a delivery framework for sustainable management of natural resources requiring joined-up policy making, including for land use, in line with the principles of the ecosystem approach (Welsh Government, 2016a,b). There is a less explicit requirement to adopt the ecosystem approach in English planning via the National Planning Policy Framework (DCLG, 2012). Further, land use planning has been identified by UK stakeholders as an area where the approach could be used to great benefit (Howard et al., 2013). However, there are limited empirical cases or evaluations of ecosystem approach based land use planning from which lessons can be drawn (Korn et al., 2003; Howard et al., 2013; Waylen et al., 2013; Phillips et al., 2014). For example, von Haaren et al. (2016) discuss the role of ES in spatial and landscape planning though from a primarily theoretical perspective and with a focus on ES values and public participation (but limited consideration of impacts on natural systems). Brody (2003) evaluated local land use plans in Florida against ecosystem management principles, missing out the ‘involving people’ aspects of the ecosystem approach. Also, whilst Korn et al. (2003) and Waylen et al. (2013) describe several ecosystem approach case studies, cases tend to be ecosystem specific (e.g. upland, wetland), conservation focussed and/or address relatively small areas (e.g. discrete catchments).

The limited availability of empirical cases is unsurprising as adopting the ecosystem approach is likely to be a challenging undertaking (Waylen et al., 2013, 2014) and existing research efforts to help operationalise the approach have focussed on specific aspects only; e.g. using the ES concept to help embed nature explicitly into planning processes and outcomes (Scott et al., 2014), which could be at the expense of other aspects, such as scale issues and public participation. Also, in agreement with Howard et al. (2013), we see integrated land use management planning at scale (i.e. regions encompassing multiple discrete ecosystems/landscapes) as a key opportunity area for the ecosystem approach. In this research, therefore, we were interested in

critically evaluating the degree to which example regional level land use planning frameworks have the potential to adopt all aspects of the approach, as per the twelve Malawi Principles. Accordingly, the overall objectives of this case study research were to: (1) identify existing regional land use planning frameworks that could have potential to operationalise the ecosystem approach and evaluate their utility in this regard; and (2) identify the main strengths and weaknesses of the frameworks reviewed to inform wider practice. We have used the Malawi Principles as our evaluation framework.

The following section describes the methodology including a summary of the case study selection process and the cases themselves. Section 3 then outlines the results of the evaluation structured by the research questions addressed. Section 4 discusses the results and considers the implications of the findings for land use planning practice elsewhere. Finally, Section 5 draws some conclusions.

2. Methodology

2.1. A case study approach

This research evaluated three UK case study land use planning frameworks for their potential to operationalise the ecosystem approach and deliver sustainable land use outcomes. As far as possible, cases were selected to be representative of other related planning frameworks. All cases exemplify broader categories of which they are members (Yin, 2009) hence the evaluation of each case study will have some wider relevance to other planning frameworks within its category (Section 2.2). The case study approach also allowed land use planning (a process) to be explored in-depth, facilitating a full investigation of the nature and complexity of each case (Cresswell, 2009). A detailed analysis of each case study’s potential to translate the 12 Malawi Principles into land use planning decision-making was undertaken along with an assessment of the methods used within the planning process.

The evaluation was inherently focussed on process aspects in that the document review method (Section 2.4.1) targeted plan documents and planning related evidence reports; i.e. ‘outputs’ in evaluation terms (HM Treasury, 2011). Accordingly, the results only provide an indication of the case study’s *potential* to deliver sustainable land use outcomes. Outcome (summative) evaluation is therefore a key area for future research (Section 4.4).

2.2. Case study selection

Four criteria were used to select the case studies. This ensured that all cases consistently exhibited several key characteristics in line with the overall research objectives (Section 1). Each case study was required to demonstrate the following:

1. *Ecosystem approach*: clearly exhibit consideration of some aspect(s) of the ecosystem approach, either explicitly or implicitly.¹ This ensured that the cases were relevant to the research objectives and therefore that useful data could be collected;
2. *UK based*: the case study research described in this paper was undertaken as part of a wider UK (Scotland) based research project that developed a new methodological framework for demand-led urban land use planning using ES ‘coldspot’ mapping (Phillips, 2014). The UK context was therefore critical to ensure that findings from the case study review (e.g. strengths and weaknesses) could usefully inform this new framework;
3. *Good availability of documentary evidence*: data collection focussed on

¹ Readers should note that none of the cases assessed explicitly adopted an ecosystem approach. Certain aspects were adopted explicitly (e.g. ecosystem assessment). Implicit aspects were teased out and evaluated using criteria (Table 3).

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