Deliberative assessment in complex socioecological systems: recommendations for environmental assessment in drylands

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Abstract Desertification is a complex process, characterised not only by a damaged ecology but also by conflict over access to scarce resources and trade-offs between the needs of multiple stakeholders at multiple scales. As such, orthodox approaches to environmental assessment in drylands, which rely solely on ecological expertise, are gradually losing legitimacy and greater attention is being given to integrated and participatory assessment approaches, which draw on multiple sources of knowledge in order to accurately describe complex socioecological processes. Moreover, there is growing recognition that successful management of desertification requires a strategy that can accommodate the multiple and often competing needs of contemporary and future stakeholders. In light of these conceptual advances, this paper highlights seven key criteria that dryland environmental assessments must meet: (1) accurately understand complex socioecological system processes, (2) focus on slow variables, (3) integrate multiple scales of analysis, (4) integrate multiple stakeholder perspectives and values, (5) ensure that future generations are fairly represented, (6) ensure that less powerful stakeholders are fairly represented and (7) integrate local and scientific knowledge. The virtues and challenges of deliberative environmental assessments, a novel subset of participatory environmental assessment approaches which places emphasis on social learning, argumentation and critical reflection, are considered in relation to each of these requirements. We argue that deliberative approaches have the potential to achieve accurate, progressive and integrated assessment of dryland environments.

Keywords Deliberation · Integrated assessment · Participation · Local ecological knowledge · Desertification

Introduction

Desertification is a classic example of a complex socioecological issue. Its underlying drivers (e.g. market forces, climatic change) interact with local level adaptive strategies, in ways that are not easily reducible to linear narratives (despite the dominance of such approaches within drylands
literature), and there is a high degree of uncertainty associated with future change. Orthodox approaches to the assessment of such complex environmental issues, which prioritise ‘expert knowledge’ in modelling and analysing biophysical data in a social, economic and political vacuum, are gradually losing legitimacy, as counter-evidence builds up against the inaccurate narratives of degradation (Leach and Mearns 1996) that such approaches justify. The work of political ecologists, ecological economists and resilience alliance scholars has highlighted the need for the assessment of complex environmental problems to be based on the integrated study of social and ecological spheres, focussing on the dynamics of the system, drivers of change and access to resources.

Integrated assessment is a term that was popularised in the 1990s (Dowlatabadi and Morgan 1993; Haigh 1998; Morgan and Dowlatabadi 1996; Risbey et al. 1996; Rotmans 1998; Schneider 1997; Toth and Hizsnyik 1998) to represent an approach to assessment that is based on the bringing together of multiple methods and approaches with the purpose of informing policy and decision making rather than simply generating knowledge (Reed et al. 2011). It has lost some of its popularity within academic literature today, partly as a consequence of being associated with a time before the prioritisation of complex system dynamics and local ecological knowledge. However, the principles of integrated assessment continue to be fundamentally important, perhaps more than ever, in light of these developments (Fish et al. 2010).

Integrated Environmental Assessment (IEA) is the interdisciplinary process of identification and analysed appraisal of all relevant natural and human processes and their interactions that determine both the current and future state of environmental quality, and resources, on appropriate spatial and temporal scales, thus facilitating the framing and implementation of policies and strategies. (NERI 1995)

The aims, approach and scope of an integrated assessment are determined primarily by the issue being considered, rather than the discipline or constraints of the researcher. As such, dealing with complex environmental issues through integrated assessment often involves the integration of multiple knowledge systems, values, disciplines and scales of evaluation (Tol and Vellinga 1998). Integrated assessment requires engagement with multiple sources of knowledge in order to untangle complex and interacting processes that are occurring on multiple temporal and spatial scales (Cash and Moser 2000; Fish et al. 2010). As such, attempts to assess and manage desertification increasingly rely on the knowledge and participation of local stakeholders in addition to scientific expertise (Failing et al. 2007; Raymond et al. 2010; Reed et al. 2008; Roba and Oba 2009; Stringer and Reed 2007). Environmental assessments are increasingly recognised as opportunities for knowledge sharing (Pretty 1995), social empowerment (Chambers 1997) and cooperative management planning (Smaigl 2010). However, effective participation of independent and reflexive social actors requires recognition of the plurality of views and experiences, which all need to be equally legitimised beyond established hierarchical structures, inequalities of power, and conflict (Cleaver 1999).

The challenge of designing and implementing integrated participatory environmental assessment approaches is being addressed within an innovative and growing body of literature (e.g. Dougill et al. 2002; González et al. 2008; Nachtergaele and Licona-Manzur 2009; Patel et al. 2007; Reed and Dougill 2002; Wang and Burris 1997; Wood 2005). A particular subset of this literature is reviewed in this paper. The focus of this essay is deliberative environmental assessment. Specifically, it considers a suggestion, which, although not new amongst political theorists, is somewhat novel in the field of environmental assessment, that facilitating deliberation within participatory assessment can promote knowledge-exchange and citizen values amongst stakeholder participants (Dryzek and List 2003), therefore addressing some of the challenges of integrated participatory assessment. This paper critically reviews the rationale behind the use of deliberative approaches to assess desertification and highlights the virtues and challenges of deliberative environmental assessments in relation to seven criteria for the integrated assessment of complex socio-ecological issues.