Land Use Policy 63 (2017) 481–492

Contents lists available at ScienceDirect

Land Use Policy

journal homepage: www.elsevier.com/locate/landusepol

Have integrated landscape approaches reconciled societal and environmental issues in the tropics?

James Reed[a,b,*], Josh van Vianen[a], Jos Barlow[b], Terry Sunderland[a,c]

[a] Center for International Forestry Research, Bogor, Indonesia
[b] Lancaster Environment Centre, Lancaster University, UK
[c] Center for Tropical Environmental and Sustainable Science, School of Marine and Environmental Sciences, James Cook University, Cairns, Qld 4870, Australia

ARTICLE INFO

Article history:
Received 8 November 2016
Received in revised form 4 February 2017
Accepted 14 February 2017
Available online 21 February 2017

Keywords:
Integrated landscape approach
Conservation and development
Society/environment trade-offs
Social-ecological systems

ABSTRACT

Landscape approaches to integrated land management have recently gained considerable attention in the scientific literature and international fora. The approach is gaining increasing support at governmental and intergovernmental levels, as well as being embraced by a host of international research and development agencies. In an attempt to determine whether, and how, these approaches compare with previous conservation and development paradigms, we reviewed the implementation of integrated landscape approaches across the tropics. Within the scientific literature we fail to find a single applied example of the landscape approach in the tropics that adequately—that is with reliable, in depth collection and reporting of data—demonstrated the effective balancing of social and environmental trade-offs through multi-scale processes of negotiation for enhanced outcomes. However, we provide an assessment of 150 case studies from unpublished grey literature and 24 peer-reviewed studies that exhibit basic characteristics of landscape approaches. Our findings indicate that landscape approaches show potential as a framework to reconcile conservation and development and improve social capital, enhance community income and employment opportunities as well as reduce land degradation and conserve natural resources. However, comprehensive data on the social and environmental effects of these benefits remain elusive. We identify key contributing factors towards implementation, and progress, of landscape approaches and our findings suggest that multi-level, or polycentric, governance structures relate well with intervention success. We conclude that landscape approaches are a welcome departure from previous unsuccessful attempts at reconciling conservation and development in the tropics but, despite claims to the contrary, remain nascent in both their conceptualization and implementation.

1. Introduction

Landscape approaches to integrated land management have recently gained considerable attention in the scientific literature and international fora (Sayer et al., 2013; Kusters, 2015; Reed et al., 2016) and represent the latest in a series of attempts to reconcile broad-scale conservation and development objectives (Glamann et al., 2015; Reed et al., 2016). With the aim of enhancing social and environmental outcomes, there is increasing support for the integration of previously distinct sectors such as agriculture, energy, forestry, and industrial supply chains to manage land and resources more sustainably. The landscape approach is appealing as a framework because it explicitly calls for the engagement of multiple stakeholders from across sectors to better negotiate trade-offs and maximize synergies within the landscape (Görg, 2007; Sayer et al., 2013; Chia and Sufo, 2015). The approach has been adopted and recognized at governmental (Indonesia, for example) and intergovernmental levels (Convention on Biological Diversity, United Nations Environment Programme), as well as being embraced by a host of international research and development agencies and non-governmental organizations. Yet despite this growing theoretical support for the landscape approach as a concept, there remains both a lack of consensus on definition and limited attempts to apply these approaches on the ground (Pfund, 2010; Scherr et al., 2013; Chia and Sufo, 2015). Furthermore, it has recently been suggested that the approach remains under-theorized (Reed et al., 2016) and that there is a lack of evidence of the effectiveness of the approach in practice (Sayer et al., 2016a). To determine to what extent landscape approaches differ from previous concepts

* Corresponding author at: Center for International Forestry Research, Bogor, Indonesia.
E-mail address: j.reed@cgiar.org (J. Reed).

http://dx.doi.org/10.1016/j.landusepol.2017.02.021

that sought to reconcile conservation and development agendas, we reviewed their implementation, and maintenance, across the tropics. Essentially, we wanted to consider whether landscape approaches represent an important, novel conceptualization of how conservation and development can be more holistically realized, or are they merely a re-branding of old ideas (Redford et al., 2013)?.

Landscape approaches are primarily rooted in conservation and the science of landscape ecology (Forman, 1995; Lindenmayer et al., 2008; Sayer, 2009). Biodiversity conservation in particular has been addressed in a "landscape context" over recent decades (cf. Sunderland et al., 2012). Despite the emphasis on reserves and protected areas in the 1980s, some authors were introducing the concept of landscapes into the conservation narrative (Forman and Godron, 1981; Noss, 1983), and early conservation theory promoted landscape-scale thinking through the principles of island biogeography (Kingsland, 2002), albeit not without criticism (Margules et al., 1982). Concurrently, systems approach thinking was developing new ways to manage common pool resources (Ostrom, 1990). The expanded focus of conservation efforts in the late 1980s and early 90s—driven by international agendas such as the Brundtland report (Brundtland et al., 1987) and the largely universal acceptance of the requirement for sustainable development (Schubert and Láng, 2005)—to move beyond protected areas and integrate broader societal needs and aspirations led to the design of "integrated development and conservation projects" (ICDPs) (Hughes and Flintan, 2001). However, the much anticipated "win-win" outcomes remained hard to achieve (or even measure) and often resulted in win-lose or even lose-lose scenarios for both conservation and development agencies (Wells and McShane, 2004). ICDPs were lamented as being too localized in focus—often targeting buffer zones surrounding protected areas—and heavily biased towards achieving conservation targets alone (Sunderland et al., 2012). Such a focus was regarded as sub-optimal for improving rural economic development (McShane et al., 2011), could lead to unforeseen environmental degradation (Garnett et al., 2007; Wells and McShane, 2004), and failed to take into account the inherent trade-offs between social and environmental concerns (Sunderland et al., 2008).

Recent decades have seen the development of a variety of landscape frameworks by multiple authors (Frost et al., 2006; Fischer et al., 2008; Sayer et al., 2013; Ros-Tonen et al., 2014; Freeman et al., 2015), with the aim of embedding single-sector conservation, agricultural production and other land uses within broader landscape-scale management strategies. Such approaches are epitomized by the "Ecosystem Approach" of the Convention on Biological Diversity, but also include a plethora of landscape-scale initiatives developed by multiple development agencies and conservation NGOs – for example: integrated water resource management, integrated rural development, and forest landscape restoration to name a few. More recently, the emerging interdisciplinary field of sustainability science has strengthened the call for improved integration between research disciplines, policy, and practice to better comprehend the complexities—and connectedness—of interactions between human and environmental systems (Kates et al., 2001; Clark, 2007). As developments in landscape-scale management strategies continue to emerge, the sheer volume of approaches has resulted in a somewhat florid and confusing terminologies, that has been suggested as a contributing factor inhibiting progress on implementation (Scherr et al., 2013; Waylen et al., 2014; Mastrangelo et al., 2014; Reed et al., 2016). This has arguably led to fragmentation of knowledge, unnecessary re-invention of ideas and practices, and slow progress in gaining policy traction (Scherr et al., 2013).

To contribute to a resolution of this confusion, it is seemingly important to define what a landscape approach is, and what it is trying to achieve. This is, however, far from straightforward as landscape approaches, and even the term landscape itself, will mean different things to different actors (Tress et al., 2001). A 'landscape' can refer to either spatial and ecological characteristics that help define conservation and development targets, or to governance and other social interactions and mechanisms that minimize conservation and development trade-offs (Redford et al., 2003). A landscape approach can be defined as a framework to integrate policy and practice for multiple competing land uses through the implementation of adaptive and integrated management systems (Reed et al., 2015). However, as landscapes, their individual components, and the stakeholders within and around them are unique and dynamic, a single management framework applied at the landscape scale cannot be expected to be successfully applied across different landscapes. Such frameworks that are proven to be optimal in one landscape may well be sub-optimal in another and implementers must be cognizant of the context specific nuances of their landscape of interest (Ward and Shackleton, 2016). A landscape approach is best considered as a process—as opposed to a project—but in order to progress towards "outcome" objectives, it is important to recognise what those objectives are, who defines them, and what mechanisms can facilitate progress towards them.

The general overarching objectives of the landscape approach are enhancing sustainability and multi-functionality within the landscape to achieve multiple outcomes. Sustainability should encompass social, economic, environmental, cultural, and often political objectives and relate to the ability of the system of interest to increase resistance to stochastic changes and resilience to future shocks—whether natural or market-induced. Meanwhile multi-functionality can refer to spatial segregation (the configuration of separate land units with different functions); temporal segregation (different functions on the same unit of land over time); or functional integration (multiple concurrent functions operating on the same unit of land) (Brandt, 2003). The landscape approach is more often related to functional integration or "real multi-functionality" and therefore implementation efforts should address the complexity of balancing the objectives of multiple stakeholders—potentially across a range of sectors (e.g. extractive resources to forest conservation) and scales (e.g. indigenous community to multi-national industry or policy) (see also: De Groot, 2006; Scherr and McNeely, 2008; O'Farrell and Anderson, 2010; Freeman et al., 2015). The key to landscape approach effectiveness or progress therefore, is understanding, and balancing, the needs and aspirations of landscape stakeholders, appreciating that perceptions of what defines success will vary amongst stakeholders, and incorporating these into formal or informal decision-making processes. This allows the identification of situations where trade-offs and synergies are likely to occur, facilitating negotiation and the application of appropriate adaptive management mechanisms. Such regular processes of consultation should seek to aid the navigation of landscape change, ideally reducing vulnerability while enhancing resilience (Folke et al., 2010). However, we acknowledge that much of the complexity is likely beyond the realms of management, and a degree of "muddling through" will invariably be necessary (Lindblom, 1959; Sayer et al., 2008).

Here, we aim to contribute to a better understanding of the practicalities of implementing a landscape approach and the mechanisms required for an effectively functioning process; thereby contributing to the ongoing discourse on reconciling conservation and development by evaluating to what extent landscape approaches represent a departure from the much-criticized prior interventions. To achieve this, we critically reviewed both the scientific peer-reviewed and non-published (grey) literature to determine 1) where terrestrial landscape approaches have been applied in the tropics, 2) whether conservation and development objectives have been integrated with successful outcomes for both,