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LETTER TO THE EDITOR

WILEY Global Change Biology

Clarifying the landscape approach: A Letter to the Editor on "Integrated landscape approaches to managing social and environmental issues in the tropics"

The landscape approach (LA) to multifunctional land management has gained traction among international organizations working toward sustainable development. World leaders have pledged to restore 350 Mha by 2030 using the LA. Governments, multinational agencies, and NGOs are key stakeholders (Bonn 2016). Focusing on the LA, Reed, Van Vianen, Deakin, Barlow, and Sunderland (2016) provided a definition, detail its development, and elaborate some of the challenges it faces. While recognizing the importance of their contribution, we seek to clarify Reed et al.'s definition of the LA, illustrate how it relates to landscape restoration, and stimulate further academic work.

Reed et al.'s (2016) definition of the LA is inaccurate. They define it as:

> *"a framework to integrate policy and practice for multiple land uses, within a given area, to ensure equitable and sustainable use of land while strengthening measures to mitigate and adapt to climate change" (Reed, Deakin, & Sunderland, 2015 in Reed et al., 2016).*

The LA framework to which Reed et al. refer is actually a set of 10 principles (Sayer et al., 2013 in Reed et al., 2016). In social-ecological research, however, frameworks are considered a set of variables and how those variables relate to one another (Ostrom, 2007). Frameworks provide a foundation to test theories of relationships through model building and evaluation (Ostrom, 2009). The principles Reed et al. refer to are not presented in relation to one another, but as a "menu" that provides management alternatives for different contexts. This strategy creates difficulties. First, it implies a more robust conceptualization of the LA than is presented, possibly stunting development of future frameworks. Second, given the range of principles in question, most forms of environmental governance (Lemos & Agrawal, 2006) might be considered a LA. This capacious definition contrasts with how Reed et al. selected and eliminated literature for their systematic review. They used a search protocol that highlights the intention of land management, without directly searching for the principles in question (Reed et al., 2015). Based on the terms in their search protocol and the principles to which they refer, it is more accurate to

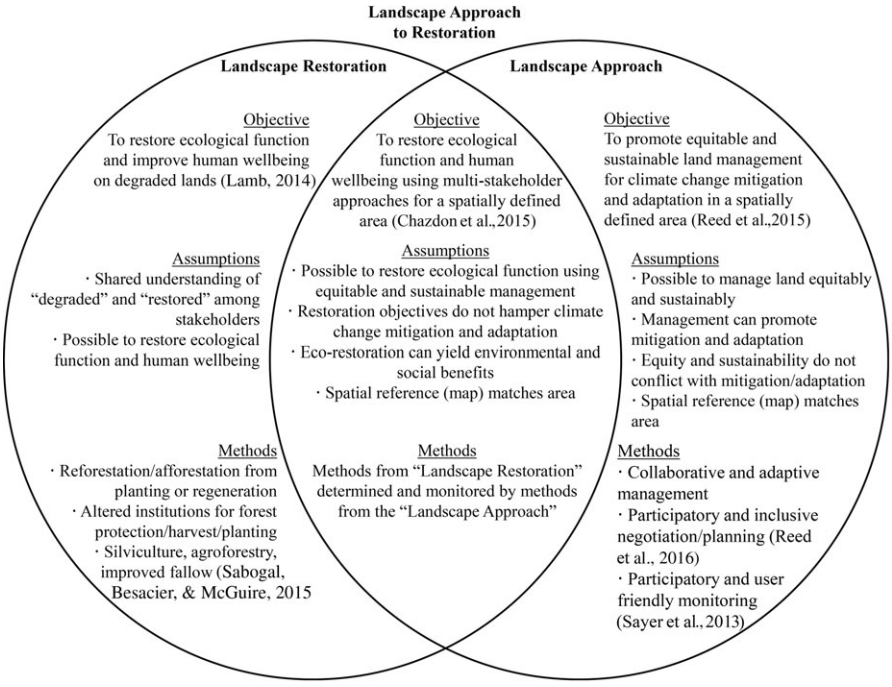

FIGURE 1 Objectives, assumptions, and methods for landscape restoration and the landscape approach

define the LA as a management ethic. A management ethic guides the use of land or the environment (Regan, 1981). Trade-offs between economic, environmental, and social objectives are inherent within land management. The LA therefore guides land management toward an integration of policy and practice that ensures sustainable, equitable, and balanced land use; strengthens climate change mitigation and adaptation; and provides adaptive and inclusive management pathways for a specific area (Reed et al., 2015). The principles Reed et al. acknowledge can guide the implementation of the LA ethic, but the approach is not reducible to one or many of those principles.

Recent international pledges have connected landscape restoration with the LA. Figure 1 illustrates objectives, assumptions, and methods from landscape restoration and the LA. The Bonn Challenge and the New York Declaration on Forests unite these concepts by promoting a "landscape approach to restoration" (Bonn Challenge 2016). Therefore, the most ambitious restoration pledges of our time aim to restore degraded landscapes through equitable and sustainable land use that enhances climate change mitigation and adaptation. The LA is thus positioned to become increasingly important for large-scale restoration and land management. Social-ecological systems scholars must rise to the task of theoretically and empirically advancing the LA.

Scholarship to advance the LA requires that its management principles be tested and coordinated. A handful of publications, based on meta-analyses and expert panels, identify principles that could guide the LA (e.g., Reed et al., 2016; Sayer et al., 2013). New scholarship on the efficacy and implementation of the LA must tie these principles together in a cogent framework, hypothesizing and testing how the different principles relate to one another through theory formation and model development/evaluation. Lessons from scholarship on the commons attest to the importance of testing and refining management principles (Agrawal & Benson, 2011). One invaluable tool to assess the efficacy of implementing the landscape approach is spatially explicit impact estimation (Ferraro & Hanauer, 2014; Miranda, Corral, Blackman, Asner, & Lima, 2016), especially evaluation that makes use of ecological and socioeconomic datasets of high temporal and spatial resolution. Such analysis can determine how different management strategies contribute to key sustainable development goals, including poverty alleviation, and the protection, restoration, and sustainable use of terrestrial ecosystems (McCall, 2016).

Research specific to the LA is nascent, but there is substantial international and cross-sectoral excitement for the approach. Honing sets of principles to develop frameworks is a positive first step. For the LA to realize its potential for restoration and sustainable development, it is critically important to develop stronger frameworks and use them to evaluate theories and test models through careful scholarship.

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