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Research Paper

Integrated landscape initiatives for agriculture, livelihoods and ecosystem conservation: An assessment of experiences from South and Southeast Asia

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HIGHLIGHTS

- Strengthening institutional and stakeholder capacity is key to ILI success.
- Early stakeholder involvement drove higher outcomes across initiatives.
- Stakeholders are often absent in planning phases of ILI development.
- Implementation costs, power dynamics and long timescales are greatest challenges.

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ABSTRACT

Integrated landscape approaches offer a means of integrating policy and practice to ensure equitable and sustainable use of land while strengthening measures to improve environmental conservation, production, and well-being outcomes. While traditionally practiced and increasingly adopted in many parts of Asia, there is no systematic assessment to date of the characteristics, outcomes, and limitations of integrated landscape initiatives (ILIs) in the region. We provide a review of 166 ILIs in South and Southeast Asia to complement previous assessments in Africa, Latin America and the Caribbean. We surveyed ILIs from 16 countries to characterize initiative contexts, motivations and objectives, stakeholders and participants, investments and outcomes, and major successes and shortcomings. Results demonstrated that ILIs are used to address multiple challenges across the region. Ecosystem conservation is the strongest driver behind ILI development and design, however, initiatives invested heavily across four identified domains: agriculture, conservation, livelihoods, and institutional coordination and planning. Investment in capacity building activities to improve agricultural practices, natural resource management and community participation, was strong. We found clear divisions in how stakeholders participate in ILIs: donors are more than twice as likely to design rather than implement ILIs, while other groups, such as women's associations, were frequently limited to implementation. Engagement of the private sector is comparatively low. Other challenges identified include concerns about the long-term sustainability of ILIs, lack of government and financial support, and agendas sidelined by powerful stakeholders. While integrated approaches are necessary to address landscape multifunctionality, many initiatives struggled to transition from planning to implementation.

1. Introduction

The nexus between agricultural production, environmental conservation and livelihood improvement continues to gain attention from the research, development and conservation communities, with increasing interest from the private sector (Andonova, 2010; MacDonald, 2010). Global dialogue on the post-millennium Sus-

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tainable Development Goals (SDGs) highlights a growing need for systems-based approaches that enhance synergies and reconcile trade-offs between multiple objectives. In this context, integrated landscape management has emerged as one of the more promising approaches to identify, negotiate and manage landscapes in a multi-stakeholder context, as it provides a framework to systematically address and negotiate conflicts between resource use and conservation, while considering multiple objectives, including social and environmental ones (Sayer et al., 2013).

Practiced and studied under many names, integrated landscape management encompasses a wide range of terms (Scherr, Shames, & Friedman, 2013) including "ecoagriculture" (Scherr, Buck, Willemen, & Milder, 2014), "satoyama" (Beílair et al., 2010), "biocultural landscapes" (Hong, 2014) and "multifunctional landscapes" (O'Farrell & Anderson, 2010). While landscape-scale initiatives may be focused on a singular goal around a defined boundary—be it social, ecological or political—integrated landscape initiatives (ILIs) are characterized by their intention to achieve multiple functional goals through collective action and integrated governance.

Integrated landscape approaches have a long history of use in many parts of Asia. They are often based on long histories of human interaction with the environment and are the foundation of societal arrangements and even psychologies (Talhelm et al., 2014). Possibly amongst the most well-known integrated landscape systems are the diverse forms of rice terracing, agroforestry and irrigation systems: the Ifugao rice terraces of the Philippines (Nozawa, Malingan, Plantilla, & Ong, 2008), the Hani rice terraces of Yunnan province in China (Jiao et al., 2011) and the *simpukng* forest gardens of the Dayak in Indonesia (Mulyoutami, Rismawan, & Joshi, 2009). Each of these represent systems that apply a mixture of private and communal governance to manage agricultural ecosystems for both natural resource conservation and livelihood benefits. For example, Bali's "subak" or water temple system supports shared water management in rice terrace landscapes. Each "subak" convenes farmers who share a common water supply, and collaborate to manage irrigation, water distribution, timing and location of crop establishment, regulations on permitted pest control interventions, as well as responsibilities regarding cultural activities (Kim & Hong, 2009).

Other commonly found forms of integrated landscape management in South and Southeast Asia include community-based natural resource management (CBNRM) initiatives, which emerged as early as the 1970s in the region (Menon et al., 2007). These initiatives frequently draw upon historical societal norms among communities dependent on natural systems for their livelihoods and cultural practices. Examples include community forestry or joint forest management (Bhattacharya, Pradhan, & Yadav, 2010; Milne & Mahanty, 2015), coastal management and community-based fisheries through customary law (Aswani et al., 2012; Cinner & Aswani, 2007), integrated watershed management (Wani, Chander, & Sahrawat, 2014), and community protected areas such as India's sacred groves (Bhagwat & Rutte, 2006).

Transboundary initiatives that serve to facilitate dialogue and action around biodiversity conservation are also common in the region, particularly in and around global biodiversity hotspots (Mittermeier, Turner, Larsen, Brooks, & Gascon, 2011). Many of these initiatives focus on the conservation of endemic species whose habitats overlap with land and natural resources valued for economic development. Other regionally important transboundary initiatives are linked to major watersheds such as the Mekong and the Ganges-Brahmaputra-Meghna river basins. These initiatives are examples of engaging with the private sector (e.g. the structure and function of the Mekong Basin Commission) to ease tensions between hydropower development, livelihood improvement, and biodiversity conservation objectives, while reducing resource degradation and vulnerability to climate change (Rasul, 2014; Sneddon & Fox, 2007).

The high rate of conversion pressure on standing tropical forests for cash crops, has led to many initiatives to mitigate deforestation and its impacts, particularly in the Malay Archipelago. Several of these initiatives are backed by climate mitigation mechanisms such as REDD+ which integrate sustainable forest management with carbon sequestration credits and biodiversity conservation objectives (Mertz et al., 2015). Concerns related to adaptation, have elevated the emphasis on livelihood and ecosystem dimensions in climate change interventions (IPCC, 2014), and have provided incentives for more integrated approaches that mainstream climate change adaptation with social protection and disaster risk reduction (Birkmann & von Teichman, 2010).

Mangrove and coastal wetland systems in South and Southeast Asia are also under conversion pressure from agriculture, urbanization and most importantly, aquaculture (Richards & Friess, 2016); these areas also suffer biodiversity degradation from unsustainable fishing practices. Recent global agreements on balancing conservation efforts with socioeconomic benefits (Edgar et al., 2014) have given rise to mangrove restoration, estuarine protection and marine protected areas (MPAs), particularly in the Coral Triangle countries of Indonesia, Malaysia and the Philippines. While most studies on integrated landscape management focus on purely terrestrial landscapes, the extensive coastline of South and Southeast Asia has resulted in many initiatives that straddle both terrestrial and aquatic systems.

Despite the strong tradition of social organization around production landscapes in South and Southeast Asia, there has been little formal effort to synthesize this approach, its impacts or its ability to reconcile the often divergent approaches of achieving agricultural productivity, biological conservation, and livelihood improvement. The purpose of this study is to complement previously conducted studies in Africa and Latin America and the Caribbean (Estrada-Carmona, Hart, DeClerck, Harvey, & Milder, 2014; Hart et al., 2015; Milder, Hart, Dobie, Minai, & Zaleski, 2014)—which jointly fill this knowledge gap—by providing a systematic characterization of 166 integrated landscape approaches in South and Southeast Asia. This review documents the location and context, motivations and drivers, participants and actors, investments and outcomes, and the most and least successful aspects of integrated landscape approaches in the defined subregions. Our results provide characteristics and recommendations that help improve the ability of integrated landscape initiatives to achieve their objectives.

In this study, we repeated methods previously used for the assessments of integrated landscape initiatives in Africa (Milder et al., 2014) and Latin America and Caribbean (Estrada-Carmona et al., 2014) as part of a global review of ILIs undertaken by the Landscapes for People, Food and Nature Initiative (http://peoplefoodandnature.org/). In order to remain consistent and to permit comparisons across regions, we used the same definition of integrated landscape initiatives (ILIs) that define ILIs as "a project, program, platform, initiative, or set of activities that: (1) explicitly seeks to improve food production, biodiversity or ecosystem conservation, and rural livelihoods; (2) works at a landscape scale and includes deliberate planning, policy, management, or support activities at this scale; (3) involves inter-sectoral coordination or alignment of activities, policies, or investments at the level of ministries, local government entities, farmer and community organizations, NGOs, donors, and/or the private sector; and (4) are highly participatory, supporting adaptive, collaborative management within a social learning framework" (Milder et al., 2014). This definition is specific enough to facilitate analysis, yet broad enough to encompass the diversity of forms that initiatives may take.