

## Re-thinking benefits of community protected areas in Mondulkiri, Cambodia

Sampho Hing<sup>a</sup>, Rebecca Riggs<sup>b,\*</sup>

<sup>a</sup> WWF Greater Mekong Cambodia Country Program, Eastern Plains Landscape Project, #21, St.322, Boeung Keng Kang I, Phnom Penh, PO Box 2467, Cambodia

<sup>b</sup> Department of Forest & Conservation Sciences, University of British Columbia, Vancouver, BC, Canada

### ARTICLE INFO

#### Keywords:

Community-based forest management  
Community protected areas  
Community forest enterprises  
Cambodia  
Conservation  
Livelihoods

### ABSTRACT

Balancing the needs of local people with biodiversity conservation is a universal challenge for protected area management. In Cambodia's forest landscapes, community-based forest management schemes are intended for rural communities to gain income in activities that support sustainable forest management in protected areas. Partnerships between communities, government, and non-government organizations to develop community-based forest management are still in their early stages, offering opportunities to learn from successes and challenges. In this paper, we report on the short-term results of a program led by WWF-Cambodia to support Community Protected Areas in Mondulkiri, Cambodia. Surveys were designed to capture changes in the knowledge, attitudes, and practices of members involved in community-based forest management. The surveys elicited local perceptions of benefits of involvement in forest enterprises and protection, and whether perceptions match the program's objective of conservation and income generation. The results of the short-term evaluation show that perceived benefits are linked to non-monetary attributes of the program, such as access to information and resources. There was no significant change in household income from forests over the two-year evaluation period. Overall, members perceived improvements in natural resource management, but expressed concerns over difficulties of managing forest enterprises. The short-term program evaluation suggests Community Protected Areas in Cambodia may have a positive impact on community governance but raises questions over realistic outcomes. Understanding local perceptions of the value of Community Protected Areas may help to better ground program objectives in local realities.

### 1. Introduction

Supporting rural communities for the conservation of tropical forests is challenging yet crucial for the long-term protection of biodiversity and global carbon sinks. Tropical countries contain 44% of the global forest area, storing carbon and harbouring two-thirds of the world's biodiversity (Keenan et al., 2015; Raven, 1988). The people living closest to tropical forests are some of the poorest in the world, representing a high proportion of households living below the poverty line of low and middle-income countries (Cheng et al., 2019; Fisher and Christopher, 2007). Meeting the development aspirations of communities living in rural tropical forest landscapes generally involves one or a combination of three pathways: (1) rural-urban migration, (2) conversion of forest to agriculture and other uses, (3) increasing the remunerative value of forests for local people. While migration (pathway 1) may be desirable for strict protection of intact ecosystems, it is not a viable option for

many households and does not necessarily lead to improved wellbeing (Hoffmann et al., 2019; Knight and Gunatilaka, 2010). More often than not, forest conversion (pathway 2) leads to negative outcomes for biodiversity and carbon (Norris, 2016; Rosa et al., 2016), and sometimes people (Butler, 2012). Finding ways in which forests can lead to greater prosperity for local people (pathway 3) has therefore become the subject of great investigation by researchers, governments, and conservation agencies (Belcher, 2005; Damania et al., 2020; Miller and Hajjar, 2020; Nambiar, 2019a; Wunder, 2001).

Many factors contribute to the degree to which rural communities can attain benefit from forests (Sunderlin et al., 2005). Tenure and rights, geographic location, institutional arrangements, cultural systems, competition for resources, and availability of capital may be of critical importance depending on the context (Baynes et al., 2015; Guariguata et al., 2010; Pagdee et al., 2006). A large body of work has demonstrated the contributions of Non-Timber Forest Products (NTFPs)

\* Corresponding author.

E-mail addresses: [sampho.hing@wwf.org.kh](mailto:sampho.hing@wwf.org.kh) (S. Hing), [Rebecca.riggs@ubc.ca](mailto:Rebecca.riggs@ubc.ca) (R. Riggs).

<https://doi.org/10.1016/j.tfp.2021.100128>

Received 26 January 2021; Received in revised form 30 July 2021; Accepted 4 August 2021

Available online 6 August 2021

2666-7193/© 2021 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

to livelihoods and conservation, and the conditions under which these deliver positive outcomes (Arnold and Pérez, 2001; Belcher et al., 2005; Ros-Tonen and Wiersum, 2005). Managing ecosystems using economic incentives, such as Payments for Ecosystem Services (PES), have also been trialled extensively throughout forested areas, with varying levels of success dependent on program design and local context (Bulte et al., 2008; Clements and Milner-Gulland, 2015; Salzman et al., 2018). Forest products and services may provide monetary and non-monetary value to communities in ways that incentivise active local management and/or protection (Dawson et al., 2014; Meijaard et al., 2013). In some cases, Indigenous and non-Indigenous communities have prevented deforestation by leveraging local action (Nepstad et al., 2006; Nolte et al., 2013; Porter-Bolland et al., 2012). In others, communities that seek to enhance their benefits from forests are unable to do so because of a range of barriers, including access, markets, capacity, regulatory frameworks, and more (Nambiar, 2019a).

To overcome these constraints, governments, multi-lateral organizations, and non-government organizations frequently initiate community-based forest management (Gilmour, 2016). Globally, community-based forest management encompasses a wide range of schemes and appeals to many as an approach for securing historical rights to forests and land while reconciling conservation and livelihood objectives (Charnley and Poe, 2007; Shackleton et al., 2002). Community-based forest management is often targeted towards biodiversity outcomes, but also includes a wide range of activities, such as NTFPs for household or commercial purposes, community forest enterprises, and payments for ecosystem services (Otto et al., 2013; Sikor, 2006). Community-based forest management offers opportunities for enhancing community governance and management in forest conservation, with potential benefits for both people and forest ecosystems (Corrigan et al., 2018; Fa et al., 2019). It may also encompass community forest enterprises, providing avenues for communities to engage in income generating activities, gain access to credit, and capture market benefits (Kozak, 2007; Macqueen, 2008; Tomaselli and Hajjar, 2011). Recently, scholars have drawn attention to broader aspects of well-being that emerge from forest enterprises, including environmental and cultural stewardship, empowerment, interpersonal and organizational relationships, and personal fulfilment (Macqueen et al., 2020).

While many studies document success factors of community-based forest management (Baynes et al., 2015; Bray et al., 2005; Charnley and Poe, 2007), others highlight problems, including access to micro-finance (Tomaselli et al., 2013), the need for external support (Bukula and Memani, 2006), negative impacts on biodiversity (Sayer et al., 2017; Shrestha et al., 2010), adverse policy and regulations (Molnar et al., 2007), and disparities in benefits and inclusion (Hajjar, 2015; Maskey et al., 2006). A recent global analysis of community-based forest management shows that pre-existing resource rights may be compromised with the formalization of community forests (Hajjar et al., 2020). Despite advancing equity as a rationale for community-based forest management, experiences suggest many state-driven programs do not lead to more inclusive benefits and participation in decision-making (Essoungong et al., 2019; Friedman et al., 2020). Community forest governance and the broader institutions arrangements that guide decision-making are critical to these outcomes (Agrawal and Chhatre, 2006; Mahanty et al., 2006; Piabuo et al., 2018). This includes understanding why households choose to engage in community forestry and, in-turn, pro-environmental behaviour (Agrawal, 2005). Learning from perceptions of governance, benefits, challenges, common interests, and individual aspirations of involved actors is therefore crucial to comprehensively capture how and if community-based forest management is meeting its desired objectives.

The rich empirical evidence demonstrating the potential for community-based forest management aligns with the moral imperative to empower rural forest communities to pursue Amartya Sen's development as freedom (Sen, 1999). Community-based forest management is not simply about poverty alleviation and biodiversity protection – it is

attentive to the spectrum of attributes that constitute well-being and sustainability in societies (Macqueen et al., 2020; Miller and Hajjar, 2020). It is therefore essential that community-based forest management is developed with a sound understanding of community values, preferences, and aspirations, and the barriers for meeting them (Hajjar et al., 2013). Enabling conditions must be grounded in context – what works and what doesn't work, and according to whom. Opportunities for learning might be built into decision and management systems, such as the use of theories of place and change (van Noordwijk, 2017). As initiatives progress, monitoring and evaluations systems are necessary to track performance, including changing preferences and conditions, and emergent challenges (Maryudi et al., 2012). Monitoring and evaluation systems should inform adaptive management (Brewer et al., 2020; Fernandez-Gimenez et al., 2008). They can also highlight hidden benefits or risks, creating new opportunities for learning and strategic action.

In this paper, we report on the short-term program evaluation of community-based forest management in the Eastern Plains Landscape in Cambodia. Rural forest landscapes in Cambodia epitomize conservation and development challenges across the tropics (Riggs et al., 2020a; Riggs et al., 2020d). Communities are poor and often disempowered with limited development opportunities. Cambodia's forests are rich in biodiversity and provide important ecological and climatic benefits for region. Forest conservation occurs within a complex social-political setting and pathways for sustainable development are difficult to find (Beauchamp et al., 2018b; Riggs et al., 2020c; Riggs et al., 2018). Community forestry offers opportunities for rural communities to gain income in activities that support sustainable forest management, reducing involvement in activities that lead to the over-exploitation of resources. Many forms of community forestry have existed over time in Cambodia (Biddulph, 2015; De Lopez, 2004; Lambrick et al., 2014; Nhem and Lee, 2019). Here, we focus on government sanctioned sustainable use zones within protected areas, referred to as Community Protected Areas (CPAs).

We present the short-term results of a program evaluation covering 19 CPAs in eastern Cambodia. We report on changes over a two-year period, in which WWF-Cambodia worked extensively with communities to support sustainable forest management, with the explicit goal of reducing threats to conservation targets by generating income through community forest enterprises. The theory of change behind this approach is that communities will reduce their impact on conservation targets as a result of alternative income-generating activities that offset income otherwise generated from over-exploitation of these target resources. Embedded into this theory of change is the explicit assumption that community participation in natural resource management will lead to greater knowledge and value in biodiversity conservation, leading to pro-environmental behavior. Here, pro-environmental behavior describes behavior that improves or conserves the environment, due to beliefs, attitudes, values, knowledge, norms, and other factors (Steg and Vlek, 2009). Previous studies have shown that pro-environmental behaviors may result from complex interactions between the state and communities, including technologies, discourses, and the interplay of power (Agrawal, 2005). In this paper, we focus on perceptions of change for the objective of adaptive management and learning (Bennett, 2016).

The purpose of this study is to understand how communities perceive the benefits of CPAs, and whether these perceptions align with the program's objective of conservation and income generation. Our findings highlight the positive impact CPAs can have at the community level, but their limitations regarding impact on income and conservation. We offer insights into the complex relationships between CPAs and external drivers of change, including market instability, infrastructure expansion, and immigration. Community-based forest management is unlikely to offer a panacea for reconciling conservation and development in Cambodia, but it may positively contribute to a wider set of sustainable development models, as it aligns with broader aspects of well-being and sustainability in rural communities.

1.1. Study site

The Eastern Plains Landscape (EPL) in Cambodia covers 28,000km<sup>2</sup> and includes a network of six protected areas containing a large portion of Cambodia’s remaining natural forests (Fig. 1). The landscape is situated within the Indo-Burma biodiversity hotspot and forms one of the largest remaining deciduous dipterocarp forests in Southeast Asia (Myers et al., 2000). Historically home to Indigenous populations dependent on forest resources, the landscape has changed rapidly in the past twenty years. Poor farmers have moved from the lowland parts of Cambodia to the forest areas to establish agricultural land, resulting in an annual population growth rate of 4.8% in Mondulkiri province between 1998 and 2019 (NIIS, 2019). Economic Land Concessions – the conversion of natural forest to rubber, tree plantations, and other crops – expanded rapidly in the area between 2005 and 2013. These events coincided with a rise in the illegal harvesting of high value timber, facilitated by the landscape’s proximity to the Vietnamese border. A large portion of EPL’s forest is under legal protection, but conservation agencies struggle to prevent deforestation and forest degradation by Indigenous and non-Indigenous smallholders seeking to improve incomes through agriculture or logging (Riggs et al., 2020a).

Recognising the growing competition between forest conservation and local development in the EPL, a number of conservation agencies are exploring options for community-based forest management. In Cambodia, government programs for community-based forest management fall under two categories; Community Forestry (CF) and Community Protected Area (CPA). Legislated in 2002, CF exists in areas managed by the Ministry of Agriculture, Forestry, and Fisheries and CPAs exist within protected areas managed by the Ministry of Environment. CPAs and CFs are intended to provide access rights for communities to meet livelihood needs through sustainable forest management, including harvesting of forest products for income and subsistence and the maintenance of cultural and spiritual values. Currently, government programs for community-based forest

management (CPAs and CFs) span approximately 800,000 hectares and 1400 villages (Department of Livelihoods, 2017; Forestry Administration, 2017). There are very few studies documenting the progress of these programs, although there is broad support among non-government organizations, international donors, and conservation scientists. Existing studies highlight the potential for CFs and CPAs to reduce forest degradation but note the complex social-political conditions that influence the degree to which communities and forests can really benefit (Lambrick et al., 2014; Pasgaard and Chea, 2013; San, 2006). Unequal distribution of benefits due to inequity in decision-making are recognised as key issues in community-based forest management in Cambodia, exacerbated by the wider context of weak governance (Pasgaard and Chea, 2013; San, 2006).

In the Eastern Plains Landscape, WWF-Cambodia have supported the establishment of 19 community-based forest management programs since 2008 (Table 1). The programs are classified as CPAs and exist within Srepok Wildlife Sanctuary and Phnom Prich Wildlife Sanctuary. WWF also provides technical support to the Ministry of Environment in the management of the two wildlife sanctuaries and has been involved in conservation in the landscape since 2002. As such, WWF support for CPAs sits within a broader, long-term strategy for community engagement in conservation and improving well-being. In the Eastern Plains Landscape, WWF-Cambodia have adopted a “Wildlife Conservation by Sustainable Use” approach to support protected area management. Working with partners, WWF manages programs to improve landscape governance, biodiversity and ecosystem health, and sustainable livelihoods. Part of this approach includes supporting the development of community-use zones within protected areas, which provide formal recognition to existing land and forest use, including harvesting of NTFPs.

At present, WWF conducts various activities (Table 2) with the primary focus of establishing and maintaining Community Forest Enterprises (CFEs). Due to limited funding and resources, support for all 19 CPAs is varied and changes depending on donor priorities and

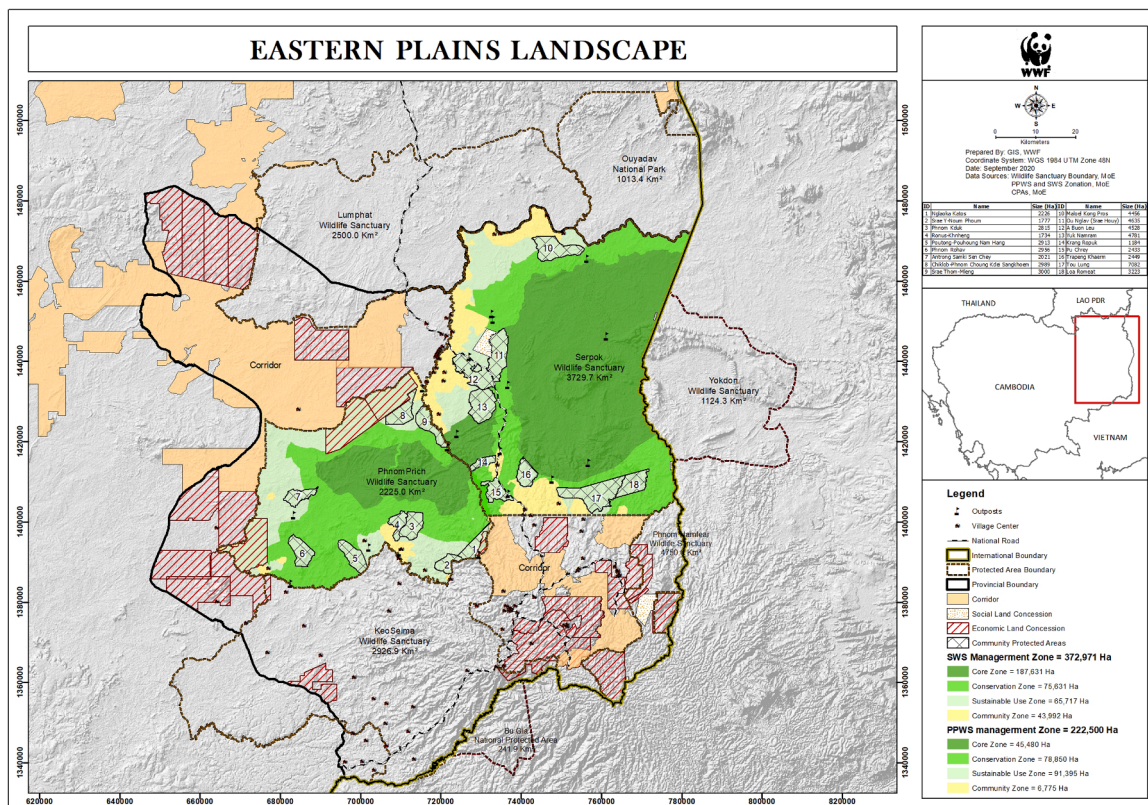


Fig. 1. Map of Eastern Plains Landscape and community protected areas.