



Effectiveness of community participation in Mangrove restoration: the evidence from northern Sri Lanka

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Abstract

As a result of the past failures in centralized management, community-based management approach was evolved as a better alternative in Mangrove management. However, effectiveness of community-based Mangrove management is remained as an important policy question with limited empirical evidence. This study aims to empirically investigate the effectiveness of community participation on Mangrove restoration using the village-level data collected from lagoon-based fishing villages in northern Sri Lanka during 2009–2020. In addition to the field data, this study adopts satellite imagery data of Landsat-7 and Landsat-8 to estimate the extent of Mangrove cover as an indicator of Mangrove restoration performance. The results show that community participation has a significant and positive impact on Mangrove restoration, suggesting the importance of strengthening community management practices for future Mangrove management.

Keywords Community participation · Mangrove restoration · Lagoon-based fishing villages · Satellite imagery data · Northern Sri Lanka

JEL Classification O13 · Q23 · Q56

1 Introduction

Mangroves are one of the most precious and productive wetland ecosystems in the tropical and sub-tropical intertidal environments (Datta et al. 2012; ITTO 2002). They offer a wide array of ecosystem services such as protection of shorelines, mitigation of climate risks by carbon sequestration, maintenance of ecological stability, and support coastal livelihoods through increasing fish production

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(Aheto et al. 2016). Yet, Mangrove forests have been continuously depleted due to intensive human interventions such as aquaculture activities, conversion into agriculture fields and salterns, illegal logging for timber, settlements, and industrial developments (Friess et al. 2019; Webb et al. 2014). During the early years of twenty-first century, global Mangrove forests have experienced an average annual loss of 0.16% (Friess et al. 2019; Hamilton and Casey 2016). Due to the rapid and large-scale degradation, global Mangrove forests have eventually reached to a point where they can no longer sustain themselves unless proper management strategies come in to action. In the past, most of the global Mangroves were brought under the control of governments. However, the history has proven that state-owned management of Mangroves has utterly failed due to lack of resources, weak enforcement of laws, absence of local knowledge, and lack of follow-ups (Aheto et al. 2016; Datta et al. 2012; Walters 2004). This urges the need to find a more inclusive and sustainable management method for Mangrove conservation.

As a result of the past failures in centralized governance, community management approach was emerged as a better alternative in Mangrove management. Subsequently, many countries had switched their Mangrove management strategy from centralized approach in to more inclusive community-based approach with the expectation of achieving sustainable outcomes. On one hand, benefits of community-based management over centralized management approaches are extensively explored. The connection between Mangroves and the livelihoods of the local people is very tangible (Badola et al. 2012). Community members have obvious incentive to take part in Mangrove management as their livelihoods are highly dependent on the benefits received from Mangrove ecosystem services (Arifanti et al. 2022). Decentralization of powers can provide more attachment and a sense of ownership to the locals so that they can pay more attention in protecting their local resources rather than exploiting them for short-term gains (Aheto et al. 2016; Datta et al. 2012). Moreover, local people are well informed with the ground situation than any other external agents and possess traditional wisdom in Mangrove management (Eddy et al. 2016).

On the other hand, in reality, there are many challenges in implementing community-based Mangrove management due to institutional and political barriers, lack of incentives, strategic behavior of the community, and lack of autonomy (Milupi et al. 2017; Aslin et al. 2009; Menon et al. 2007; Bawa et al. 2007; Salam et al. 2006; Agrawal and Ostrom 2001; Sundar et al. 2001; Baland and Platteau 1996). Amidst the existing challenges, whether community-based management approach can be successful in managing the Mangroves has become an important policy question. The existing studies are mainly focused on the factors underlying the successes or failures of community-based Mangrove management and/or the pros and cons of community-based Mangrove management over centralized Mangrove management (Damastuti and Groot 2022; Arifanti et al. 2022; Datta et al. 2012; Walters 2004). However, the studies focusing on effectiveness of community-based Mangrove management is relatively scarce. Therefore, this study intends to provide solid empirical evidence on the effectiveness of community-based Mangrove management in the context of postwar Mangrove restoration in northern Sri Lanka. Through this