

Participation Patterns in Community-Based Fire Management: Implications for Climate Change Adaptation in Northern Thailand

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Abstract:

Community-based fire management (CBFiM) is increasingly recognized as a frontline climate change adaptation strategy in Southeast Asian forest landscapes, yet whether adaptation activities are broadly shared across communities or concentrated within small groups of active implementers remains unclear. Satellite fire detection data from NASA FIRMS (2015–2025) recorded thirteen fire events across two community forests in Ngao District, northern Thailand, a trend corroborated by community members who reported worsening fire conditions in recent years during interviews. This study examines participation patterns across seven CBFiM activities such as: community meetings, training, firebreak construction, patrol, suppression, satellite monitoring, and environmental awareness, among 164 respondents across four groups: brigade members and community members in Ban Pong and Ban Rong Ta community forests. Participation rates revealed a sharp division between brigade and non-brigade members across both communities. Operational activities such as patrol, suppression, and firebreak construction recorded nearuniversal non-participation among community members, while brigade members consistently reported higher and more frequent engagement. Ban Pong Brigade demonstrated broader and more consistent participation compared to Ban Rong Ta Brigade, whose engagement was more variable. Satellite monitoring showed the lowest integration across all groups despite moderate awareness, suggesting a gap between the availability of resources and practical use. These findings indicate that as climate-driven fire pressure intensifies, CBFiM adaptation is only sustained by a small number of active participants, highlighting the urgent need to broaden community engagement for more inclusive and resilient fire management across Southeast Asia.

Keywords:

Community-based fire management, climate change adaptation, forest management, volunteer fire brigade.