Community-Based Approaches to Sustainable Fisheries Governance

Prabhutva Chaturvedi[1]*, Kusumlata Goswami[1], Bipina Biju[2,3], Padmanabha A.[1], Eshita Shrivastava[1] and Shubham Disodia[1]

[1] *College of Fisheries Science, CCS Haryana Agricultural University, Hisar – 125 004, India*
[2] *Faculty of Fisheries Science, Kerala University of Fisheries and Ocean Studies, Kochi, Kerala –682506, India.*
[3] *ICAR-Central Institute of Fisheries Technology (CIFT), P. O. Matsyapuri, Cochin - 682 029, India.*

Corresponding Author
Prabhutva Chaturvedi
Email: chaturvediprabhutva@gmail.com

OPEN ACCESS

Keywords

Locally managed marine areas, Ecological resilience, Adaptive monitoring, Inclusive governance.

How to cite this article:

Chaturvedi, P., Goswami, K., Biju, B., Padmanabha, A., Shrivastava, E. and Disodia, S. 2025. Community-Based Approaches to Sustainable Fisheries Governance. *Vigyan Varta* 6 (12): 159-161.

ABSTRACT

Community-based fisheries management (CBFM) where coastal communities share governance and stewardship demonstrates strong potential for ecological recovery, socioeconomic resilience, and inclusive governance. Case studies from small-scale preferential access areas (PAAs) to locally managed marine areas (LMMAs) in Madagascar reveal improved fish biomass, livelihoods, and governance. Scaling such approaches requires institutional support, adaptive monitoring, and inclusive leadership. This article presents key insights from verified research and offers a forward-looking perspective on community guardianship.

INTRODUCTION

Global fisheries face mounting pressures: overfishing, habitat degradation, and governance gaps threaten both marine ecosystems and coastal livelihoods. Conventional, centralized management often lacks local buy-in or responsiveness to community contexts, undermining both compliance and effectiveness. In contrast, community-based and co-management models where fishers, communities, and institutions share responsibility offer adaptability and legitimacy

(Sen & Nielsen, 1996; Pomeroy & Berkes, 1997). Foundational reviews highlight how shared governance fosters stewardship by aligning conservation with community interests.

Recent assessments highlight the effectiveness of preferential access areas (PAAs) small zones reserved for local, small-scale fishers demonstrating significant gains in nutritional and economic returns (Basurto *et al*., 2024). Similarly, locally managed marine areas (LMMAs), particularly Madagascar's Velondriake, show meaningful ecological regeneration, especially in reef fish biomass, when communities lead management (Gardner *et al*., 2020; Gilchrist *et al*., 2020). These examples illuminate how community guardianship can deliver results at multiple scales.

Fig. 1 Community Based Fisheries Management

Preferential Access Areas: Boosting Nutrition and Community Fisheries

Preferential access areas reserve defined spaces exclusively for small-scale fishers, limiting industrial competition. A global empirical study found 44 countries had established 63 PAAs, covering about 3% of continental shelf area. In sample countries during 2016–2017, PAAs delivered higher small-scale catch volume, landed value, self-consumption fishing, and nutrient-rich species than areas outside PAAs (Basurto *et al*., 2024).

Table 1. Impacts of Preferential Access Areas (PAAs)

Indicator	Outcome in PAAs vs Outside Areas
Catch volume by small-scale fishers	Higher in PAAs
Landed value	Higher in PAAs
Self-consumption fishing	Higher in PAAs
Nutrient-rich species	More prevalent in PAAs

Source: (Basurto et al., 2024).

These results suggest that relatively small, well-designed zones can significantly enhance food security and economic resilience in coastal communities especially when governance is shared and enforced.

Locally Managed Marine Areas (LMMAs): Environmental and Social Gains in Madagascar

Velondriake, the first LMMA in Madagascar, emerged from successful periodic octopus closures initiated in 2004 by local Vezo communities supported by Blue Ventures. By 2006, it encompassed coral and mangrove reserves and a set of customary rules (dina) reinforced by both community and legal mechanisms. Governance is administered via community-elected committees (Gardner *et al*., 2020; Gilchrist *et al*., 2020).

Empirical ecological data demonstrate the effectiveness of community-managed no-take zones within the LMMA. Fish biomass within these zones increased by approximately 219 ± 58% compared to control sites (Gilchrist *et al*., 2020). Lessons from a decade and a half of LMMA implementation highlight key success factors: co-management (not purely community-led), NGO presence, locally relevant resource focus, poverty alleviation linkages, user-driven decisions, diverse funding, and adaptive monitoring (Gardner *et al*., 2020).

Table 2. Success Factors in Scaling LMMAs

Key Factors	Description
Co-management	Shared authority between community and NGO/government
Local resource focus	Targeting species vital to local food and income (e.g., octopus)
Poverty alleviation linkages	Combining livelihoods (e.g., aquaculture, health) with management
Monitoring & adaptive learning	Regular data-based evaluation enabling course-correction

Source: Gardner et al., 2020; Gilchrist et al., 2020.

These structures reveal how LMMAs function as both ecological sanctuaries and social institutions allowing for meaningful governance and environmental restoration.

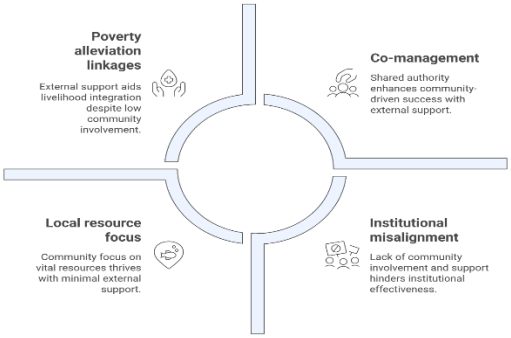

Fig.2 Success factors and Challenges in Scaling LMMAs

Challenges and Pathways for Scaling

Despite successes, expanding community-based management faces barriers. Sustained external support financial, technical, and legal is often needed to consolidate local gains and integrate LMMAs into national policy (Gardner *et al*., 2020). Furthermore, institutional misalignment and limited enforcement capacity can hinder sustained benefits (Gardner *et al*., 2020).

However, the growing body of documented success in PAAs and LMMAs offers a practical blueprint: structured co-management, robust monitoring, livelihood integration, and multi-level governance support can help scale localized successes into broader sustainability movements.

CONCLUSION

Community stewardship through preferential access areas and locally managed marine areas offers a compelling, evidence-backed approach to sustainable fisheries. PAAs demonstrate how local zones can multiply nutritional and economic returns, while LMMAs like Velondriake showcase both ecological recovery and inclusive governance. Forward momentum will depend on solid institutional backing, adaptive learning, and resilience-building across scales. If nurtured, community guardians of the sea can lead the way to fisheries that are ecologically robust, socially equitable, and locally empowered.

REFERENCES

Basurto, X., Virdin, J., Franz, N., DeLand, S., Smith, B., Cleary, J., Vegh, T., & Halpin, P. (2024). A global assessment of preferential access areas for small-scale fisheries. *npj Ocean Sustainability*, *3*, 56.

Gardner, C. J., Cripps, G., Prémesnil Day, L., Dewar, K., & Harris, A. (2020). A decade and a half of learning from Madagascar's first locally managed marine area. *Conservation Science and Practice*, *2*(5), e298.

Gilchrist, H., Rocliffe, S., Anderson, L. G., & Gough, C. L. (2020). Reef fish biomass recovery within community-managed no take zones. *Ocean & Coastal Management*, *192*, 105210.

Pomeroy, R. S., & Berkes, F. (1997). Two to tango: the role of government in fisheries. *Marine Policy*, *21*(5), 465–481.

Sen, S., & Nielsen, J. R. (1996). Fisheries co-management: a comparative analysis. *Marine Policy*, *20*(5), 405–418.