CGIAR | CGIAR SCALING FOR IMPACT | SUSTAINABLE ANIMAL AND AQUATIC FOODS

WorldFish

**Governance Policy Brief**

# Sustaining Community Fish Refuges in Cambodia through Community-Based Governance

October, 2025

Photo Credit: Carla Baldivieso

## Acknowledgments

We are grateful to all those who participated in the empirical work that accompanied the research project that frames this publication and who contributed their time and resources to the scholarly understanding of processes of social organization in rural Cambodia. The authors gratefully acknowledge the collaboration of the following organizations that were part of the research project that frames this paper: WorldFish Cambodia, the International Water Management Institute in Sri Lanka and Laos, and the Leibniz Center for Agricultural Landscape Research in Germany. The empirical case study would not have been possible without the contribution of Mr. Yan Yin (rip), whose input into the empirical process and analysis of the initial field findings was invaluable.

## Funding

This publication is based on research funded by the Academy for International Agricultural Research (ACINAR), under the SusLAND research framework of the Leibniz Centre for Agricultural Landscape Research (ZALF). ACINAR is commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by ATSAF e.g. on behalf of Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

This work was done with contribution from the CGIAR Initiatives on Securing the Food Systems of Asean Mega-Deltas for Climate and Livelihood Resilience (AMD), Resilient Aquatic Food Systems for Healthy People and Planet (RAqFI), Sustainable Animal and Aquatic Foods (SAAF) and the CGIAR Scaling for Impact (S4I) Program. We thank the funders who supported this research through their contributions to the CIGAR Trust Fund.
(https://www.cgiar.org/funders/).

## About CGIAR Scaling for Impact (S4I) program

Scaling for Impact (S4I) is a CGIAR program (2025–2030) that tests, refines, and scales innovations in food, land, and water systems. It works to align those innovations with stakeholder needs to achieve transformative impact.

Website: https://www.cgiar.org/cgiar-research-porfolio-2025-2030/scaling-for-impact/

## About CGIAR

CGIAR is a global research partnership for a food secure future.

Visit https://www.cgiar.org/research/cgiar-portfolio to learn more about the initiatives in the CGIAR research portfolio.

## AUTHORS

1. Carla Baldivieso- Humboldt Universität zu Berlin, Thaer-Institute of Agricultural and Horticultural Sci., Germany; Leibniz Centre for Agricultural Landscape Research (ZALF), Sustainable Land Use in Developing Countries, Germany; Comunidad de Estudios JAINA, Bolivia
2. Sanjiv De Silva- International Water Management Institute (IWMI), Sri Lanka and Laos
3. Pia Gleich- Technische Universität Berlin, Germany
4. Kimourn Soeun- Human Resources and Economic Development Organization (HURREDO), Cambodia
5. Sreypov Neth- International Institute of Rural Reconstruction (IIRR), Cambodia
6. Phichong Ou- WorldFish, Cambodia
7. Vathanak Sun- WorldFish, Cambodia
8. Vichet Sean- WorldFish, Cambodia
9. Sothanh Oem- Royal University of Agriculture (RUA), Cambodia
10. Chandy Koy- Royal University of Agriculture (RUA), Cambodia
11. Lara Ostrower- Humboldt Universität zu Berlin, Thaer Institute of Agricultural and Horticultural Sci., Germany
12. Sarah Freed- International Center for Tropical Agriculture (CIAT), Kenya
13. Mak Sithirith-
14. Mark Dubois- International Water Management Institute, Sri Lanka and Laos
15. Stefan Sieber- Humboldt Universität zu Berlin, Thaer Institute of Agricultural and Horticultural Sci., Germany; Leibniz Centre for Agricultural Landscape Research (ZALF), Sustainable Land Use in Developing Countries, Germany
16. Michelle Bonatti- Humboldt Universität zu Berlin, Thaer Institute of Agricultural and Horticultural Sci., Germany; Leibniz Centre for Agricultural Landscape Research (ZALF), Sustainable Land Use in Developing Countries, Germany; University of Vila Velha, Brazil

## PHOTOS

Carla Baldivieso / carla.baldivieso.s@gmail.com
WorldFish / https://www.flickr.com/photos/theworldfishcenter

## DESIGN SUPPORT

Palash Dhar, WorldFish
Sumaya Tabassum, WorldFish

# Sustaining Community Fish Refuges in Cambodia through Community-Based Governance

In Cambodia, inland fisheries, including Rice Field Fisheries (RFFs), are a key element of rural food and nutrition security, seasonal income, and an important cultural asset. However, these fisheries are increasingly threatened by habitat loss, changes in land use, overfishing, pollution, and climate change (Joffre et al., 2012; Phala et al., 2019). In response to these pressures, international organizations, government agencies, local NGOs, and local communities have partnered to implement Community Fish Refuges (CFRs) within RFFs to protect fish stocks, increase productivity, and strengthen local food systems. (Kim et al., 2019). CFRs - human-made or natural water bodies, serve as refuges for fish during the dry season when the flood water recedes, allowing for stock recovery and dispersal across rice fields during the flood season[1]. Managed by local communities with support from the Fisheries Administration Cantonment (FiAC) and external parties in the early stages of implementation, CFRs provide multiple benefits including stable aquatic habitats; increased production of aquatic foods; water for other productive uses; enhanced food and nutrition security; greater supplementary income; groundwater recharge, and climate resilience. Given this diversity of ecosystem services, many CFRs are multiple-use systems (Freed, Kura, et al., 2020; Freed, Ou, Sean, & Sun, 2024a, 2024b).

However, the sustainability and success of CFRs largely depend on the capacity of local villagers to collaborate and engage in collective action, an essential component of sustainability, which calls for cooperation and coordination among diverse users to effectively govern their CFR. In addition, the capacity of the locally elected CFR Committee to develop and enforce rules that preserve the CFRs' biophysical characteristics, while managing trade-offs between competing demands on ecosystem services—particularly those involving shared water resources—is also vital to maintaining social-ecological sustainability. This challenge is exemplified by the need to maintain a minimum water level for aquatic ecosystems while also meeting irrigation and other extractive demands during the dry season. Addressing such trade-offs effectively requires the collective capacity of CFR actors to collaboratively develop adaptive management rules and processes, and to learn together from this process. In this policy brief, we examine some of the challenges of collective management and grassroots decision-making in a rural Cambodia context, and underscore the social dimensions that development actors, policymakers, and funding agencies who initiate development interventions must consider.

## Key messages

- Structural inequalities—including gender, education, and socioeconomic status—undermine inclusive participation and leadership in CFRs.
- CFR initiatives heavily depend on external support, raising concerns about their long-term sustainability without stronger local capacity and financial autonomy.
- Short-term project cycles are often misaligned with the time required to shift from authority-centered decision-making to more inclusive and deliberative governance practices.
- Transformational change can be fostered through knowledge-sharing approaches that engage diverse voices and encourage more participatory forms of governance.
- Rapid livelihood diversification through expanding national and local economies and increased mobility weakens social ties, reduces reliance on CFRs, and complicates efforts to maintain long-term, community-based management of a common pool resource like CFRs.

[1] During the dry season, fish farmers continue to engage in fishing activities, catching fish from habitats that are relatively evenly distributed. During both the dry and flooded seasons, the total catch typically accounts for approximately 60% of the fish and other aquatic animals.

## Recommendations

- Prioritize long-term funding and programmatic support that fosters social-ecological sustainability and inclusive local leadership.
- Support capacity-building for adaptive management, with continuous learning and knowledge-sharing platforms.
- Strengthen local financial autonomy by integrating CFR planning into Commune Council budgets and encouraging community-driven fundraising.
- Facilitate inclusive participation by addressing social barriers and supporting diverse leadership beyond traditional power holders.
- Align CFR support strategies with both ecological and social contexts, ensuring governance structures are responsive to local realities and evolving livelihoods.

## Evolving Local Contexts and Implications for CFR Governance

Rural communities are increasingly diversifying their livelihoods, especially in areas near urban centers and tourist destinations, with migration contributing to a shift away from traditional agriculture and fishing toward market-oriented and non-agricultural activities. Financial pressures, such as debt, also drive this change. Despite these shifts, many CFR sites show motivation among community members and local actors to engage in resource management and environmental sustainability. These dynamics open up space to explore the social dimensions of more transformative CFR leadership, while emphasizing that the drivers of community governance are varied and highly context-specific.

## What are the challenges to ensuring sustainable and inclusive CFR management?

The CFR Committee typically includes influential figures from both the village and local government levels. This often comprises the Village Chief, who oversees coordination within the village; members of the Commune Council—the lowest tier of local government—who help facilitate engagement with external agencies; and representatives from the Water User Group Committees (WUGCs), who manage water bodies and infrastructure such as water gates. Together, the CFR Committee and the Commune Council serve as local intermediaries, promoting the flow of information between villagers, government institutions, and NGOs. While CFR initiatives have yielded positive outcomes, including improved ecosystem services and increased community knowledge, we observed persistent challenges rooted in deeper structural and social limitations. These findings raise important questions about the feasibility of collective action in Cambodia, specifically, bottom-up efforts led by villagers to manage shared resources. The effectiveness of such initiatives is deeply shaped by national political dynamics and long-standing structural dependencies, which influence how local governance and community engagement unfold.

Our study reveals that further assessment is needed to increase the impact and sustainability of CFR. Identified areas related to governance are:

a) **Social differences—such as gender roles, education levels, age, and socioeconomic status—often create structural barriers to equal participation in CFR management.** These factors can limit individuals' ability to engage fully or take on leadership roles, especially when responsibilities like committee membership, patrolling, or financial oversight are assigned according to established social norms (Shieh et al., 2021). Limited literacy, time constraints due to household or livelihood duties, and the challenge of finding committee members who are both available and qualified further exacerbate these barriers.
These structural inequalities have significant implications for the effectiveness and inclusiveness of CFR governance. They hinder the development of diverse and representative leadership, weaken community engagement, and risk marginalizing key voices.

b) **Challenges to locally-led CFR management.** The CFR system and the CFR Committee rely on support and facilitation from external actors, like WorldFish and local NGOs, especially for training, technical advice, and access to management tools. This support is particularly helpful

in the early stages of CFR development or when costly interventions are needed. However, this reliance raises concerns about the long-term sustainability of CFRs if external support decreases or is removed. While some communities develop their mechanisms, such as local fundraising, their efforts often fall short of what´s needed to fully support management activities. Levels of reliance vary depending on the maturity of the CFR, the strength of local leadership, and the complexity of management needs.

c) **Misalignment between project timeframes and the timescale of transformational social change.** A key challenge in CFR initiatives is the mismatch between the short-term nature of most external support and the longer-term processes needed to shift local social relations and governance practices. Meaningful, lasting change—particularly where it involves rethinking established norms around leadership, participation, and resource use—requires sustained engagement, including follow-up training, guidance, and sometimes facilitation to support adaptive learning and collective decision-making. Yet, these needs often exceed the duration and scope of typical project cycles. This challenge becomes more pronounced when moving from pilot initiatives to wider-scale implementation. In the CFR context, while the government has set commendable and ambitious scaling targets[2], the full implications in terms of required time, resources, and ongoing support have not always been fully accounted for. To ensure that scaling leads to meaningful outcomes rather than symbolic structures, there is a growing need to adopt more programmatic, long-term strategies that can nurture strong, locally embedded institutions over time.

## How can support strategies be reevaluated to enhance sustainable CFR governance?

To foster a more socially meaningful change that supports the ongoing economic and ecological positive outcomes, long-term strategies are necessary to work on the traps created by social differentiation and power dynamics, amplifying diverse voices and ensuring broader legitimacy. Achieving this requires sustained long-term engagement and investment in participatory action interventions, supported by learning practices that can question and possibly disrupt established practices, encourage alternative perspectives, and promote a more inclusive approach to governance and ecological management. Fostering an inclusive learning environment—where all members can contribute meaningfully—depends on both structural change and active motivation from local authorities, government bodies, and villagers themselves, especially given the voluntary nature of participation in CFR initiatives.

To reduce external funding dependence, it will be important to support community-driven learning and decision-making, facilitate trust-building processes with villagers, including, and to strengthen links between CFR plans and official Commune Council development processes and budgets. Tapping into Commune funding and encouraging local ownership can help build more resilient, self-sustaining CFRs.

Furthermore, while the CFR categorization developed in 2015 represents an important step toward more tailored management, it primarily focuses on ecological characteristics and management (Brooks et al., 2015). Building on this effort, there is a need to more fully integrate social and governance considerations to ensure support strategies are not only ecologically informed but also socially responsive.

The transformation of CFR governance in Cambodia requires context-specific strategies that actively address existing power imbalances, build local financial autonomy, and foster inclusive participation beyond hierarchical leadership structures, while acknowledging the evolving rural context. Therefore, we advocate for long-term strategies and funding mechanisms that prioritize social-ecological sustainability, equity, and inclusivity, ensuring that diverse local actors have meaningful participation in CFR governance, rather than focusing solely on short-term outcomes. Additionally, we underscore the funding priorities outlined for CFR fisheries (Freed, Ou, Sean, & Sun, 2024), advocating for capacity-building for adaptive management and knowledge-sharing, balanced support for biophysical conditions and governance structures. These actions are vital for fostering collective responses and deepening community engagement with CFRs as shared resources.

[2] One Commune, One Community Fish Refuge" advocacy campaign.

## References


1. Brooks, A., Kim, M., Sieu, C., Sean, V., & Try, V. (2015). A characterization of community fish refuge typologies in rice field fisheries ecosystems (Handbook: 2015-37). WorldFish.
2. Freed, S., Kura, Y., et al. (2020). Rice field fisheries: Wild aquatic species diversity, food provision services and contribution to inland fisheries. Fisheries Research, 229, 105615. https://doi.org/10.1016/j.fishres.2020.105615
3. Freed, S., Ou, P., Sean, V., & Sun, V. (2024). Rice-fish co-production pathways for sustainable development in Cambodia. Penang, Malaysia: WorldFish. Policy Brief: 2024-10.
4. Freed, S., Ou, P., Sean, V., & Sun, V. (2024). Key lessons and priority research and investments for community fish refuge-rice field fisheries. Penang, Malaysia: WorldFish. Policy Brief: 2024-11.
5. Joffre, O., et al. (2012). Community fish refuges in Cambodia—Lessons learned. Phnom Penh. Retrieved from www.valliertheo.com
6. Kim, M., Mam, K., Sean, V., Try, V., Brooks, A., Thay, S., Hav, V., & Gregory, R. (2019). A manual for community fish refuge-rice field fisheries system management in Cambodia. Phnom Penh, Cambodia: Fisheries Administration and WorldFish Cambodia.
7. Ou, P., Sean, V., Sun, V., & Akester, M. (2024). Sustainable Aquaculture and Community Fish Refuge (SAFR) project: Final report 2024. Penang, Malaysia: WorldFish. Technical Report: 2024-14.
8. Phala, C. et al. (2019) 'Assessment of community fish refuge management practice in the Siem Reap Province of Cambodia', Environments - MDPI, 6(1). Available at: https://doi.org/10.3390/environments6010001.
9. Shieh, J., et al. (2021). Integrating nutrition and gender into community fish refuge-rice field fishery system management: A results report. Penang, Malaysia: WorldFish.
10. https://hdl.handle.net/20.500.12348/5007

Photo Credit: WorldFish

## Disclaimer



This publication is based on the following paper, which is part of a PhD project funded by the Academy for International Agricultural Research under grant number 70220 (see funding details). Baldivieso Soruco, C. R., Bonatti, M., De Silva, S., Ou, P., Soeun, K. O., Neth, S., Sun, V., Rodríguez, T., Sean, V., Sithirith, M., Dubois, M. & Sieber, S. (2025). Disentangling community-based resource governance through knowledge systems mapping: Insights from community fish refuges in Rural Cambodia. The Journal of Rural and Community Development, 20(2), 1–33

For further information, please refer to the original materials by contacting the first author of this publication at the following email address:

carla.baldivieso.s@gmail.com