UC Berkeley
Recent Work

Title
Assessment of Korea's Forest Carbon Investments in the Mekong Region: Paths Forward for REDD+ Climate Finance

Permalink
https://escholarship.org/uc/item/3zp5z7b2

Authors
Ingalls, Micah
Haya, Barbara K
Dwyer, Michael B
et al.

Publication Date
2026-11-23

Supplemental Material
https://escholarship.org/uc/item/3zp5z7b2#supplemental

Copyright Information
This work is made available under the terms of a Creative Commons Attribution License, available at https://creativecommons.org/licenses/by/4.0/

eScholarship.org Powered by the California Digital Library
University of California



Assessment of Korea's Forest Carbon Investments in the Mekong Region: Paths Forward for REDD+ Climate Finance

MEKONG CENTER
UC Berkeley Carbon Trading Project
Plan 1.5

Contributors

Micah Ingalls, PhD, Executive Director, Mekong Center for Research and Policy, Vientiane, Lao PDR

Barbara K Haya, PhD, Director, Berkeley Carbon Trading Project, Senior Researcher, Goldman School of Public Policy, University of California Berkeley, United States

Michael B Dwyer, PhD, Associate Professor, Department of Geography, Indiana University Bloomington, United States

Kevin M Woods, PhD, Research Fellow, Faculty of Social Sciences, Chiang Mai University, Thailand

Thales A P West, PhD, Fellow, Centre for Environment, Energy and Natural Resource Governance, University of Cambridge, UK

Acknowledgements

The authors would like to thank Plan 1.5 for sponsoring this research, and the many individuals who contributed their time and expertise.

Suggested Citation

Ingalls, M., Haya B. K., Dwyer, M. B., Woods, K. M. & West, T. A. P., (2026). *Assessment of Korea's Forest Carbon Investments in the Mekong Region: Paths Forward for REDD+ Climate Finance.* The Mekong Center for Research and Policy & Berkeley Carbon Trading Project

Executive Summary

REDD+ (reducing emissions from deforestation and forest degradation) is a set of international programs focused on directing results-based climate finance toward tropical forest conservation. In recent years, there has been increasing scrutiny over the quality of REDD+ investments. These critiques have focused on effectiveness — whether carbon investments are in fact securing and increasing forest carbon; on social credibility, including questions about negative impacts on local communities in forest areas; and on the quality of the carbon credits generated — that is, whether credits are issued in excess of actual reductions in forest carbon losses.

The Republic of Korea is preparing to become a major REDD+ investor. Under its 2030 Paris Agreement contribution, the government intends to source 37.5 million tons of emission reductions abroad — roughly a tenth of its total reduction commitment — of which some 9 million tons are to come from REDD+ under Article 6.2 of the Paris Agreement. Korea began its REDD+ program with three pilot projects in Southeast Asia: the Tumring Project in Cambodia, the North Zamari Wildlife Sanctuary in Myanmar, and the Dong Hua Sao National Park in Laos. Building on the experiences of these pilots, Korea is planning to upscale its REDD+ investments to jurisdictional programs in Honduras, Guatemala, Vietnam, and Laos.

Korea's approach has a genuine advantage over purchasing credits on the carbon market after they have been generated: by funding projects from inception, Korea is positioned to shape how they are designed and, with this, has an added responsibility to ensure positive social and environmental outcomes.

Purpose of this report

This report assesses all three pilots developed by the Korean Forest Service and its partners to determine the quality of these investments, the implications they may have for Korea's future carbon financing and, by implication, what lessons learned may be instructive for other global investors in REDD+.

We assess quality in these pilot projects against three tests: (1) Does the project durably reduce deforestation? (2) Does the project avoid harm to the people living in and around the project area and share benefits fairly? and (3) Does it avoid issuing more credits than the reductions warrant? Our evaluation combines field assessment with a close reading of project documents and available published data and research, statistical modeling of remotely-sensed imagery to determine forest change, and long-standing research expertise of our coauthor team on forest governance in each country. Each sub-study goes beyond an assessment of one REDD+ project to contemplate how a major investor can effectively support activities that reduce deforestation in the specific historical, governance, human rights, and economic context of the country it is in. Each concludes with specific recommendations doing so, with implications for REDD+ investments globally.

Cambodia: Tumring REDD+ Project

Tumring covers 66,645 hectares in Kampong Thom province and is implemented by the Cambodian Forestry Administration. It was registered in 2020 and issued 645,410 credits in 2021 for the period 2015–2019 — the only credits any of the three pilots has generated to date.

Our analysis finds that the project did little to reduce deforestation between 2015 and 2025. Community Forests, most of which existed before the project under local community management, now remain forested islands amid a heavily deforested landscape otherwise managed by the Forestry Administration. Net of all changes, our analysis finds no evidence that the project had a reliably positive impact on reducing deforestation.

The field evidence explains why. The project attributes forest loss to smallholder "slash and burn" farming and in-migration, while omitting the large-scale, underlying drivers shaping the landscape: the timber concessions the Forestry Administration itself granted and protected, a 6,200-hectare rubber concession that stripped eight villages of farmland, and commercial logging. All farmers interviewed for this research had come to the project area in search of available land due to landlessness or land shortage, and nearly 90% were in debt. Project benefits to local communities played a negligible role in replacing livelihoods lost due to project restrictions on land and forest use. What was delivered consistently was law enforcement: arrests, crop destruction, and seizures of agricultural equipment and other farmer assets. Little evidence could be found to verify meaningful information and consent processes among affected persons. The grievance mechanism established by the project to address conflicts is managed under the Forestry Administration. As a critical party in these disputes, conflict of interests is clear.

Myanmar: North Zamari Wildlife Sanctuary

North Zamari is a joint project of Terra Global Capital and Myanmar's military-controlled Forest Department, with US$1.4 million in funding from the Korean Forest Service. It proposes to credit some 96,888 hectares inside the sanctuary and operates across a larger project zone of 273,690 hectares, which contains 26 villages targeted by the project's activities.

Two rival governing institutions — the Myanmar military who ousted the elected government in a 2021 coup and the exiled National Unity Government (NUG) that formed in the wake of the coup — claim the credited land and neither fully controls it. While nearly 1,500 events of political violence and more than 2,400 deaths are recorded within 50 kilometers of the sanctuary since the 2021 coup, the project's risk rating — in some part due to the limitations of the risk assessment tool itself — fails to appreciate these substantial risks. Independent assessment of natural risk, such as due to fire, finds that the project is likely to be considerably over-credited. Our additional analysis of political risk using Verra's updated non-permanence risk tool finds that the project's low risk rating will likely over-credit by 70% in total and that project risk is too high to meet Verra eligibility requirements. Consistent with a long historical pattern of military-civilian engagement in Myanmar, we argue that carbon financing is rather being used by the military regime as a tool for advancing territorial security, enclosure, and exclusion by the military-state apparatus. These facts substantially jeopardize any carbon credits generated through this project and cast into doubt any claims of permanence, particularly given the NUG's published position that investments of this kind enacted under the military regime will not be recognized following cessation of hostilities.

As in Cambodia, the project's design largely ignores structural drivers of deforestation and, instead, focuses on mitigating impacts from smallholder land and forest use. The project's field appraisal ranks dam construction, commercial logging, and plantations as responsible for around 70% of forest loss, none of them activities the villages carry out, and yet project activities focus on restraining smallholder farming.

Lao PDR: the Dong Hua Sao National Park

The Dong Hua Sao Project is the one case still at the design stage, and it therefore provides a crucial opportunity to learn from the lessons of Cambodia and Myanmar and apply better and more effective project design. The draft project would credit 93,935 hectares in southern Laos under Verra's new VM0048 methodology. Like Tumring and North Zamari, it names villagers in and around the park as "the main agents of deforestation" and attributes their actions to poverty and weak governance.

The spatial evidence points elsewhere. The leading edge of recent forest loss is associated with the Nam Phak hydropower complex inside the Park and the paved road serving it. It is also associated with cassava expansion involving local and non-local business actors operating heavy machinery, and with displacement from roughly 10,000 hectares of corporate rubber concessions along the western flank. The words "concession" and "land lease" do not appear in the draft Project Description Document. Mineral exploration licenses now abut the Park, and a larger private carbon claim by the same corporate group that holds the hydropower concession risks overlap with the project area. The draft Project Description claims that local communities have no legal land rights in the Park — a position no longer tenable under revised legislation. National Assembly Resolution 57 and its implementing instruments make households in state forest areas eligible for titles and land use certificates where their claims predate the protected area, and Decision 4565 of the Ministry of Agriculture and Forestry ties forest-carbon rights to demonstrated land-use rights. Finally, the project cannot be financed as designed: an indicative purchase price near US$5 per carbon credit sits well below the cost of reducing emissions through REDD+. Because the Dong Hua Sao project is in its early design stages, this is a critical moment in which the Korean Forest Service can develop a credible and effective project able not only to secure forest areas, but also substantively benefit local communities.

A common pattern, and what drives it

Three projects in three countries, under three political regimes, three methodologies, and three developers, all converge on the same outcome. Each misidentifies the drivers of forest loss, naming smallholders while the larger commercial and state-authorized drivers are largely ignored by the project design. In each, the proponent is an agency implicated in the allocation decisions that produced the clearing it is now paid to police. In each, enforcement — immediate and cheap — substitutes for meaningful livelihood alternatives that are slow, costly, and arguably beyond these agencies' capacities. In each, validation certified conformity with the rules rather than the accuracy of the claims.

This is not simply poor execution in three unlucky places. The instrument is easy to game, and its incentives run consistently in one direction: toward diagnosing the problem as the behavior of people a project can more easily control, and toward baselines and risk assessments generous enough to fund the monitoring and reporting but leave

little else for local benefit. Verra's newer methodology closes the most flexible of those doors by allocating baselines from a jurisdictional budget rather than letting developers define their own, but it does not reach the diagnosis, the choice of proponent, the reliance on enforcement, or the price. This raises significant reputational and investment risks for Korea and may potentially jeopardize fulfillment of Korea's Nationally Determined Contributions under UN Agenda 2030. The conclusion is not that forest protection through the REDD+ mechanism cannot be done well. Dong Hua Sao suggests the opposite: caught early, with the right preconditions in place and financing sufficient to achieve meaningful results, the Korea Forest Service can build a project that is credible and effective, and upscale these provisions to future jurisdictional programs.

However, the design of effective, fair, and harmless REDD+ projects requires more than what can be written into the rules and requirements of a carbon crediting program. This is especially true given the incentives to cut corners and exaggerate carbon credits, and the failures of third-party auditors to enforce hard-to-measure program requirements. Quality projects must be developed on a clear understanding of the history and drivers of deforestation in the area, the interests and needs of communities who depend on and use those forest areas, and the distribution of project risks and benefits. Until now, the primary beneficiaries of REDD+ carbon finance have mostly been governmental agencies, non-governmental organizations, and carbon offset companies and consultancies. This needs to change. Carbon finance should directly support forest users themselves, since their rights, livelihoods, and decisions play a crucial role in determining whether the forest stands. Tenure rights of people living in and using the project area, including customary rights, must be recognized from the outset rather than left unresolved or to be addressed later. Outcomes are most likely to be successful where carbon projects rest on a strong legal framework that enshrines the equitable rights of key stakeholders and provides the transparency and rule of law needed to hold project proponents accountable. Without these foundations, even a carefully designed project will fail to deliver credible climate results or lasting benefits, both for global climate regulation and for the people who depend on these forests.

Recommendations

Our recommendations for the Korea Forest Service, and for any major supporter of REDD+, follow from these findings.

1. **Do not treat the Tumring credits as credible emission reductions.** Our impact evaluation finds no consistent evidence that the project reduced deforestation and indicates an inflated baseline. An independent investigation should be performed on public disclosure, consent, and law enforcement actions carried out under the project.

2. **Discontinue North Zamari in its present form and redirect the committed funds.** Two rival authorities claim the credited land and neither fully controls it under a state of armed civil conflict. Funds would be better spent supporting forest governance by those who reliably hold the territory, including the Karen National Union's Indigenous conservation landscapes, alongside non-credited support to the National Unity Government and ethnic administrations.

3. **Redesign Dong Hua Sao before validation.** The project should rebuild its driver analysis around distinct agent types and the new access road, exclude land slated for authorized conversion, publish a concession register, and resolve potentially overlapping carbon claims. It should also make tenure formalization a precondition of validation

and the basis of its rights structure and benefit-sharing arrangements. The project should replace agency-based enforcement with paid forest management and protection contracts for resident rights-holders.

4. **Provide upfront investment to enable the conditions for quality.** Tenure formalization, FPIC (free, prior, and informed consent), grievance mechanisms, and management capacity should be fully financed up front. When a design is scaled to fit the purchase price, these are the components cut first.

5. **Fund the actors who actually hold the forest.** Community forest committees, Indigenous networks, and guardian villages in the regions of study have protected forest more effectively than implementing agencies at a fraction of the cost. Paying them directly is the most effective way to avoid deforestation and aligns who bears the cost of protection with who is rewarded for it.

6. **Buy independent evidence, not assurance.** Developer-paid auditors confirmed that the calculations and discretionary design choices of the developers were allowable, rather than that they were accurate and adequate to project needs. Verification should be independently funded and findings published publicly.

7. **Pay more for high quality, credible carbon.** A price near US$5 per ton is below the cost of producing a compliant credit, and a realistic floor for high-integrity projects needs to be determined on a landscape-by-landscape basis. High prices are not sufficient to mitigate against the political risk of unscrupulous REDD+ investment, but they are necessary.

8. **Act now, while there is still substantial room to manoeuvre.** The three pilots cover under 2% of the planned area of Korea's REDD+ program and will set the design logic for jurisdictional programs two orders of magnitude larger.

Taken together, these steps describe the difference between buying carbon and protecting forests. Korea is unusually well placed to do both. The three pilots show what happens when the instrument is allowed to define the diagnosis; Dong Hua Sao and Korea's jurisdictional programs offer the chance to reverse that order and make REDD+ investments that are effective, credible, and fair to the people who live in the forest.

Table of Contents

Executive Summary **3**

1. Introduction 11

1.1 Study and methods 11

1.2 Background 14

REDD+ on the voluntary carbon market 14

How the methodologies work 15

The making of a carbon credit on the Verra registry 16

Article 6 of the Paris Agreement 17

Korea's use of Article 6 to meet its Paris Agreement contribution 17

Korea's three pilot REDD+ projects 18

2. Cambodia: The Tumring REDD+ Project 19

Summary of findings and recommendations 19

2.1 Introduction 21

2.2 Historical, Political, and Institutional Context 23

2.3 Findings 28

Finding 1. The Project largely failed to address underlying drivers of forest loss rooted in tenure displacement, tenure insecurity, and economic marginalization. 28

Finding 2. Project activities to mitigate the proximate causes of deforestation through livelihood alternatives were largely unsuccessful. 30

Finding 3. Much of the project area was deforested over the last decade. 31

Finding 4. Community Forests in the project area largely maintained their pre-project forest cover; the Forestry Administration's conflicted relationship with community forestry undermines the project's ability to take credit for this. 33

Finding 5. Project law enforcement efforts resulted in harassment, fear, and property loss for poor farmers living in the accounting area. 35

Finding 6. The project appears to have generated credits far in excess of its actual impact on forest loss. 37

2.4 Recommendations 41

For the Tumring REDD+ Project 41

General recommendations for KFS 42

3. Myanmar: North Zamari Wildlife Sanctuary 43

Summary of findings and recommendations 43

3.1 Introduction ····44
3.2 Historical, Political, and Institutional Context ····46
3.3 Findings ····48
Finding 1. The military regime (the project developer) cannot reasonably guarantee forest protection for the project duration due to civil war and contested legal authority and actual control over the credited land ···· 48
Finding 2. High project risk exceeds project eligibility thresholds; if the current risk rating were used, 70% of credits would likely be over-credited. ····50
Finding 3. The project supports military-controlled forestry efforts used to prosecute an ongoing civil war, exposing the Korean government to substantial political risk. ····52
Finding 4. The project ignores the largest drivers of deforestation, focusing instead on restricting local villagers' customary use of the forest. ····53
Finding 5. The uncertain status of community forestry implementation is serious cause for concern. ···· 54
3.4 Recommendations ····56
4. Lao PDR: Dong Hua Sao National Park ····58
Summary of findings and recommendations ····58
4.1 Introduction ····60
4.2 Historical, Political, and Institutional Context ····62
4.3 Findings ····65
Finding 1. The project addresses the wrong drivers: Encroachment is a direct result of structural drivers of land scarcity. ····65
Finding 2. Land concessions constitute the single greatest risk of project failure, but are not addressed by the project. ····68
Finding 3. Potentially overlapping forest-carbon claims threatens both project viability and wider reputational risk. ····69
Finding 4. Subsequent legislative reforms have made the project's tenure model unviable. ····70
Finding 5. Current carbon financing is not enough to deliver a credible project. ····71
4.4 Recommendations ····72
Recommendations for Dong Hua Sao ····72
Recommendations for Korea's Jurisdictional Program in Phongsaly ····73
5. Discussion, Conclusion, and Overall Recommendations ····75

List of Figures and Tables

Figures

Figure 1.1. How baseline choices and non-permeance risk estimates affect carbon crediting. 13
Figure 2.1. Tumring REDD+ Project Area. 21
Figure 2.2. Timeline of the Tumring REDD+ project. 22
Figure 2.3. Deforestation hotspots and farm survey locations. 23
Figure 2.4. Video stills from an August 2026 eviction. 29
Figure 2.5. Deforestation in the Project Area by year cleared. 32
Figure 2.6. Forest loss in the project area. (2015-2025) 32
Figure 2.7. Deforestation in the southern part of the project area. 33
Figure 2.8. Estimated project impact on annual deforestation inside the project accounting area (ha). 39
Figure 2.9. Estimated project impacts on annual deforestation inside the project accounting area (ha) compared to control areas selected. 40
Figure 3.1. North Zamari Wildlife Sanctuary project area and project zone. 45
Figure 3.2. Key events in the North Zamari REDD+ activity, 2014–2026. 45
Figure 3.3. Political violence around North Zamari Wildlife Sanctuary since the coup. 50
Figure 3.4. Deforestation in and around the North Zamari project zone. 55
Figure 4.1. Dong Hua Sao Project Area. 61
Figure 4.2. Deforestation Fronts: 2015–2020 and 2020–2025. 65
Figure 4.3. Composite Deforestation Fronts 2015–2025. 66
Figure 4.4. Forest Clearance in Somsouk and Nabone Villages for Cassava. 66
Figure 4.5. Land Concessions by Sector. 67

Tables

Table 1.1. Project documents reviewed for this study. 14
Table 1.2. South Korean Government-led Pilot REDD+ Projects. 18

1. Introduction

REDD+ is a global effort to harness climate finance for multiple social and ecological benefits of reducing emissions from deforestation and forest degradation, especially in the biodiversity-rich tropics. Conceptualized as a results-based payment framework, the program has evolved over the last two decades from a largely government-to-government effort to include a range of private-sector actors through the sale of carbon credits. REDD+ is seen by many as generating urgently needed funding for forest conservation from governments and companies seeking to meet emissions targets and, in doing so, avoid biodiversity loss and protect the resources and livelihoods that forest communities depend on.[1]

Most field-based studies find that REDD+ has not lived up to this potential. Most REDD+ projects focus on restricting forest use by smallholders, ignoring more important but politically and financially challenging commercial drivers of deforestation, while failing to effectively provide livelihood substitutions for target communities. All too often, this partial and restrictive approach has undermined rather than supported the stated goals of forest conservation, climate mitigation, and community benefits, with burdens falling disproportionately on the most marginalized. Further, projects systematically overestimate their climate benefits and credits issued.

The Korean government is currently preparing to make large global investments in REDD+ programs, scaling up from three pilot projects in three Mekong region countries of Cambodia, Myanmar and Laos, where deforestation is accelerating, and forest communities are struggling to protect the forests they depend on for their food, fiber, and livelihoods. These projects — Tumring in Cambodia, North Zamari Wildlife Sanctuary in Myanmar, and Dong Hua Sao National Park in Laos — are expected to generate voluntary carbon market credits under the Verra carbon offset registry that may be used towards its Paris Agreement emissions reduction target.

1.1 Study and methods

This study examines the outcomes and quality of those pilot projects in detail. We define quality as (1) effectively reducing deforestation in a sustained way, (2) avoiding harm to communities and benefiting communities in a way that is fair and doesn't exacerbate inequalities, and (3) not over-crediting (generating more credits than the project's actual effect on emissions). Based on our findings, and drawing from a wealth of published literature on REDD+ outcomes, we provide specific recommendations for how Korea can best support REDD+ in the pilot project countries. These lessons learned are instructive not only for Korea as it contemplates upscaling to larger jurisdictional programs but also, by implication, for other major investors in REDD+ in the Mekong Region and globally.

On both the voluntary and UN (compliance) carbon markets, each credit should represent one verified metric ton of

1 Avoided deforestation, left out of the Kyoto Protocol, came back onto the global climate-policy agenda in the late 1990s with the expansion of UNFCCC negotiations to include tropical countries. The acronym "REDD+" is itself is a product of debates in these negotiations and elsewhere about how to effectively reduce forest-related emissions through transnational governance: In 2007, following the earlier proposal for a Reducing Emissions from Deforestation (RED) mechanism (at COP 11), a second "D" was added at COP 13 to reflect the complex realities of forest management (for instance, the impact of selective logging on carbon emissions). The "+" reflects both the inclusion of reforestation (or "carbon enhancement") and, in a caution against carbon reductionism, the importance of including social benefits for forest-adjacent communities and management for biodiversity.

carbon dioxide-equivalent (tCO_2e) reduced or removed from the atmosphere. Whether these credits represent their claimed emissions reductions matters, since the credits can take the place of direct emissions reductions.

However, study after study has found that REDD+ offset projects overestimate their emissions reduction benefits, often significantly. Field-based qualitative studies[2] and remote-sensing-based quantitative studies[3] have consistently found that Verra REDD+ projects have had much less effect on deforestation than they claim. The most important source of over-crediting has been the baseline: project developers have commonly exaggerated the amount of deforestation that would likely have occurred without their REDD+ projects and thus the amount of carbon emissions their project reduces. This has been possible largely due to significant flexibility in baseline choices from legacy methodologies.[4] Studies quantifying this over-crediting found that, on average, only one credit in 13[5] and one in 10[6] are likely real. REDD+ projects also systematically underestimated the risk that forests conserved by REDD+ projects will undergo major losses such as wildfire or logging. A study of 67 Verra REDD+ projects found that an average of 22% of credits issued to the developer should have been put aside into a buffer pool to insure against the 100-year risk of reversal as Verra requires.[7] Figure 1.1 illustrates how the choice of conservative or lenient baselines and non-permanence risk values affects the number of credits issued to a project.

It is also common for REDD+ projects to result in harm to forest communities. Our review of the project documents of all 75 Verra REDD+ projects registered by 2022 found that almost all projects focused on changing the behavior of smallholders, even in the majority of projects that identified other drivers such as industrial agriculture, logging, and mining as more important.[8] We also found that almost all of these projects imposed restrictions on smallholder forest use. Such restrictions place economically and politically marginalized forest-dependent communities at substantial risk.[9] As REDD+ projects are typically implemented in mountainous, forested landscapes across large stretches of land,

2 Seyller, C., Desbureaux, S., Ongolo, S., Karsenty, A., Simonet, G., Faure, J., & Brimont, L. (2016). The "virtual economy" of REDD+ projects: Does private certification of REDD+ projects ensure their environmental integrity? International Forestry Review, 18(2), 231–246. https://doi.org/10.1505/146554816818966273; Withey, L. S. (2021). Sequestering livelihoods: REDD+, autonomy and adaptation on a Colombian forest frontier [Doctoral dissertation, Department of Environmental Science, Policy, and Management, University of California, Berkeley.] https://escholarship.org/uc/item/1cp1d56h

3 Swinfield, T., Williams, A., Coomes, D., Dales, M., Ferris, P., Guizar-Coutiño, A., Hartup, J., Holland, J., Jaffer, S., Jones, J.P.G., Lam, M.O.K., Keshav, S., Madhavapeddy, A., Toye-Scott, E., West, T.A.P., Balmford, A. (2026). Learning lessons from over-crediting to ensure additionality in forest carbon credits. *Nature Communications.* 17(3944) https://doi.org/10.1038/s41467-026-71552-3; Takahata, K., Suetsugu, H., Fukaya, K., Shirota, S. (2024). Bayesian state-space synthetic control method for deforestation baseline estimation for forest carbon credits. Environ. Data Sci. 3, e6. https://doi.org/10.1017/eds.2024.5; Tang, Y., Yang, C., Wu, H., Xu, Z., Tan, L., Tu, W., Li, B., Li, Z., Wang, Z., Guo, K., Xiong, S., Chen, S., Zhang, B., Tian, J., Hu, Y., Chen, Z., Chase, J.M., Li, Q. (2025). Tropical forest carbon offsets deliver partial gains amid persistent over-crediting. Science 390, 182–187. https://doi.org/10.1126/science.adw4094; West, T. A. P., Wunder, S., Sills, E. O., Börner, J., Rifai, S. W., Neidermeier, A. N., & Kontoleon, A. (2023). Action needed to make carbon offsets from tropical forest conservation work for climate change mitigation. Science, 381(6660), 873–877. https://www.science.org/doi/10.1126/science.ade3535

4 West, T. A. P., Bomfim, B., & Haya, B. K. (2024). Methodological issues with deforestation baselines compromise the integrity of carbon offsets from REDD+. *Global Environmental Change, 87,* 102863. https://doi.org/10.1016/j.gloenvcha.2024.102863

5 West, T. A. P., Wunder, S., Sills, E. O., Börner, J., Rifai, S. W., Neidermeier, A. N., & Kontoleon, A. (2023). Action needed to make carbon offsets from tropical forest conservation work for climate change mitigation. Science, 381(6660), 873–877. https://www.science.org/doi/10.1126/science.ade3535

6 Swinfield, T., Williams, A., Coomes, D., Dales, M., Ferris, P., Guizar-Coutiño, A., Hartup, J., Holland, J., Jaffer, S., Jones, J.P.G., Lam, M.O.K., Keshav, S., Madhavapeddy, A., Toye-Scott, E., West, T.A.P., Balmford, A. (2026). Learning lessons from over-crediting to ensure additionality in forest carbon credits. *Nature Communications.* 17(3944) https://doi.org/10.1038/s41467-026-71552-3

7 Wu, C., Goulden, M. L., Randerson, J. T., Trugman, A. T., Wang, J. A., Yang, L., Acil, N., Cook-Patton, S. C., Cullenward, D., Davis, S. J., Williams C. A., Anderegg, W. R. L. (2026). A global analysis of climate-driven reversal risks in forests. https://doi.org/10.64898/2026.06.19.733404

8 Haya, B. K., Alford-Jones, K., Anderegg, W. R. L., Beymer-Farris, B., Blanchard, L., Bomfim, B., Chin, D., Evans, S., Hogan, M., Holm, J. A., McAfee, K., So, I. S., West, T. A. P., & Withey, L. (2023). Quality assessment of REDD+ carbon credit projects. Berkeley Carbon Trading Project. https://gspp.berkeley.edu/research-and-impact/centers/cepp/projects/berkeley-carbon-trading-project/REDD+

9 See: Lord, E.J., & Sareen, S. (2025). "Subjects of Injustice: Inequity, Misframing and Human Rights Violations in a Tanzanian REDD+ Pilot Project." *Geoforum, 161*. https://doi.org/10.1016/j.geoforum.2025.104245; Howson, P. (2017). "Intimate Exclusions from the REDD+ Forests of Sungai Lamandau, Indonesia." *Conservation and Society, 15*(2), 125–35. https://doi.org/10.4103/0972-4923.204071; Chomba, S., Kariuki, J., Lund, J. F., & Sinclair, F. (2016). Roots of inequity: How the implementation of REDD+ reinforces past injustices. *Land Use Policy, 50*, 202–213. https://doi.org/10.1016/j.landusepol.2015.09.021; Poudyal, M., Ramamonjisoa, B. S., Hockley, N., Rakotonarivo, O. S., Gibbons, J. M., Mandimbiniaina, R., Rasoamanana, A., &

Indigenous People and poor, land-scarce smallholder farmers commonly face the brunt of law enforcement actions,[10] even violent eviction.[11] Meanwhile, social safeguards, such as Free, Prior, and Informed Consent requirements and grievance mechanisms, are easy to "game" and thus run the risk of being treated as box-ticking exercises rather than offering real protections.[12]

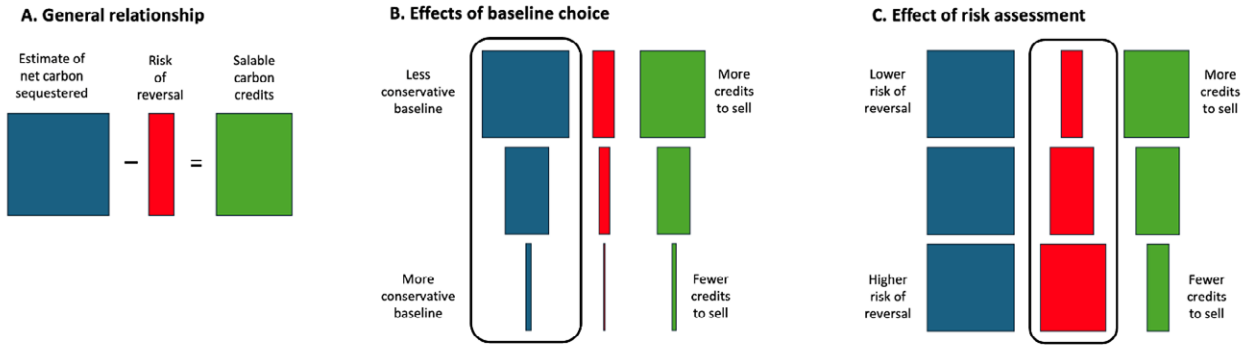

Figure 1.1. How baseline choices and non-permeance risk estimates affect carbon crediting.

These outcomes are structural. Flexibility in carbon accounting methods leads to over-crediting when paired with project developers' financial incentives to choose high baselines and low-risk values to earn more credits.[13] Third-party auditors, often pointed to as enforcers of quality, are tasked with ensuring that chosen accounting methods are permissible, not necessarily that they are accurate. Further, auditors are hired directly by the project developers, thus creating financial incentives to judge leniently, which may be particularly problematic when auditors must make subjective judgements in a context of high levels of complexity, uncertainty, and information asymmetry — the project developer knows more about the project than the auditor visiting the site for a few days — that is typical of offset projects.[14]

Overall, the Korean government is taking a promising approach to addressing REDD+ offset quality, by supporting

Jones, J. P. G. (2016). Can REDD+ social safeguards reach the 'right' people? Lessons from Madagascar. *Global Environmental Change, 37,* 31–42. https://doi.org/10.1016/j.gloenvcha.2016.01.004; Scheba, A., & Rakotonarivo, O. S. (2016). Territorialising REDD+: Conflicts over market-based forest conservation in Lindi, Tanzania. *Land Use Policy, 57,* 625-637. https://doi.org/10.1016/j.landusepol.2016.06.028

10 See: Astuti, R., & McGregor, A. (2017). "Indigenous Land Claims or Green Grabs? Inclusions and Exclusions within Forest Carbon Politics in Indonesia." *The Journal of Peasant Studies,* 44(2), 445–66. https://doi.org/10.1080/03066150.2016.1197908; and Asiyanbi, A. P. (2016). "A Political Ecology of REDD+: Property Rights, Militarised Protectionism, and Carbonised Exclusion in Cross River." *Geoforum, 77,* 146–56. https://doi.org/10.1016/j.geoforum.2016.10.016

11 Counsell, S. (2024). "Blood Carbon: How a Carbon Offset Scheme Makes Millions From Indigenous Land in Northern Kenya." *Indigenous Policy Journal, 34*(2), 280. https://assets.survivalinternational.org/documents/2466/Blood_Carbon_Report.pdf; Carbon Trade Watch. (2024). "Indigenous Environmental Network. A Dozen of the Worst REDD-type Projects Affecting Indigenous Peoples and Local Communities." Carbon Trace Watch Briefing. https://no-redd.africa/resources#blood-carbon-how-a-carbon-offset-scheme-makes-millions-from-indigenous-land-in-northern-kenya

12 Haya, B. K., Alford-Jones, K., Anderegg, W. R. L., Beymer-Farris, B., Blanchard, L., Bomfim, B., Chin, D., Evans, S., Hogan, M., Holm, J. A., McAfee, K., So, I. S., West, T. A. P., & Withey, L. (2023). Quality assessment of REDD+ carbon credit projects. Berkeley Carbon Trading Project. https://gspp.berkeley.edu/research-and-impact/centers/cepp/projects/berkeley-carbon-trading-project/REDD+; Milne, S., & Mahanty, S. (2019). Value and bureaucratic violence in the green economy. *Geoforum, 98*, 133–143. https://doi.org/10.1016/j.geoforum.2018.11.003

13 Haya, B. K., Alford-Jones, K., Anderegg, W. R. L., Beymer-Farris, B., Blanchard, L., Bomfim, B., Chin, D., Evans, S., Hogan, M., Holm, J. A., McAfee, K., So, I. S., West, T. A. P., & Withey, L. (2023). Quality assessment of REDD+ carbon credit projects. Berkeley Carbon Trading Project. https://gspp.berkeley.edu/research-and-impact/centers/cepp/projects/berkeley-carbon-trading-project/REDD+

14 Coglianese, C. & Giles, C. (2025). *Third-Party Auditing Cannot Guarantee Carbon Offset Credibility.* U of Penn Law School, Public Law Research Paper No. 25-28. http://dx.doi.org/10.2139/ssrn.5345783

projects from the start rather than buying credits from the market after they have been generated. By partnering with project developers, the Korean government has the ability to ensure accurate carbon quantification, and shape projects to effectively protect forests and achieve positive community benefits.

We drew our findings from analysis of project reports, assessments of published academic and grey literature, satellite analysis of forest loss, formal statistical evaluation of project impact, and our team's long-standing research on forest policy in each country. For each case, we analyzed project documents available through the Verra registry[15] and those provided by the Korea Forest Service and the Korean NGO Plan 1.5, including the Project Description Document (PDD), monitoring reports, auditing reports (validation and verification reports), and non-permanence risk reports (Table 1.1). We compared the claims in the project documents and methods for calculating emissions reductions against existing published studies and our team's own current and previous field research in each country of study. For each case, we undertook specific empirical investigations to independently assess what was happening on the ground; differing circumstances in both the projects and their immediate contexts dictated different approaches for each case. For more detail, see each case-study chapter. All figures are created by the authors unless indicated otherwise.

Table 1.1. Project documents reviewed for this study.

Project Name	Participatory Rural Appraisal	Project Description	Validation Report/s	Non-Permanence Risk Report	Monitoring Report	Verification Report	Project Review Reports
Tumring[16]		2018	2018	2019	2020	2020	2018, 2020
North Zamari Wildlife Sanctuary[17]	2016	2020, updated 2026	2023, 2024	2026			
Dong Hua Sao		draft, n.d.					

1.2 Background

REDD+, the voluntary carbon market, and Article 6 of the Paris Agreement are complex and full of their own vocabulary. Here we provide background on each.

REDD+ on the voluntary carbon market

Verra is the largest **voluntary carbon market registry.** Carbon registries are non-governmental organizations and private companies that create the voluntary carbon market. The backbone of the carbon market is registry-adopted **methodologies** — rulesets defining project eligibility criteria and methods for monitoring and calculating the emissions reductions/removals and carbon credits generated by each participating project. Registries adopt methodologies, run third-party auditing processes, issue credits, and keep track of who owns or retires them.

15 Verra's Verified Carbon Standard (VCS) Program Registry: https://registry.verra.org/verra/public/program/VCS

16 Tumring project page with project documents: https://registry.verra.org/verra/public/program/VCS/projects/1689

17 North Zamari Wildlife Sanctuary project page with project documents: https://registry.verra.org/verra/public/program/VCS/projects/1848

Tumring and North Zamari Wildlife Sanctuary are registered under old Verra REDD+ methodologies that have been found to significantly over-credit and fail to protect forest communities (see summaries of key literature above). Tumring uses **VM0009,**[18] which was developed by Wildlife works, an original partner on the Tumring REDD+ project, and is already inactive. North Zamari uses **VM0006**,[19] which was developed by Terra Global Capital, one of the proponents of the North Zamari Wildlife Sanctuary REDD+ project, and will soon be inactivated. Dong Hua Sao in Laos intends to register under Verra's new REDD+ methodology, **VM0048**,[20] adopted in 2023 to replace VM0006, VM0009, and Verra's other older methodologies. While **VM0048** is a stronger methodology, particularly by reining in flexibility in baseline choices, it does not address some of the other sources of poor quality from VM0006 and VM0009.[21]

How the methodologies work

All Verra REDD+ methodologies estimate emissions reductions in the same basic method.

Emissions reductions and credit generated for each crediting period:

= (Deforestation that would likely have occurred without the REDD+ project
– Actual deforestation)
× Carbon per hectare, which can be stratified into different forest types
× Deduction % for (uncertainty + leakage + non-permanence risk)

Whereby:

uncertainty: uncertainty in forest carbon estimates is quantified, and a deduction is applied to ensure credits are **conservative** (more likely to under-credit than to over-credit)

leakage: activities that reduce deforestation can displace deforestation drivers outside of project boundaries

non-permanence risk: a reversal occurs in any year when actual net forest carbon losses in the project account area exceed baseline loss rates. Developers assess the risk of reversal from natural (e.g., fire) or human (e.g., logging) causes using Verra's Non-Permanence Risk Tool.[22] Deductions as a percent of total credit issuances are deposited into Verra's buffer insurance pool to cover reversal risk over 100 years. Each project's buffer pool contribution should cover its actual 100-year risk of reversing credited forest carbon stocks.

18 Verified Carbon Standard. (2014). *Approved VCS Methodology VM0009, Methodology for Avoided Ecosystem Conversion, v3.0.* https://verra.org/methodologies/vm0009-methodology-for-avoided-ecosystem-conversion-v3-0/

19 Verified Carbon Standard. (2014). *Approved VCS Methodology VM0006, Methodology for Carbon Accounting for Mosaic and Landscape-scale REDD Projects, v2.2.* https://verra.org/methodologies/vm0006-methodology-for-carbon-accounting-for-mosaic-and-landscape-scale-redd-projects-v2-2/

20 Verified Carbon Standard. (2023). *Approved VCS Methodology VM0048, Reducing emissions from deforestation and forest degradation, v1.0.* https://verra.org/methodologies/vm0048-reducing-emissions-from-deforestation-and-forest-degradation-v1-0/

21 Haya, B. K., Alford-Jones, K., Anderegg, W. R. L., Holm, J. A., & West, T. A. P. (2024). *Quality Assessment of Verra's Updated REDD+ Methodology (VM0048)* [Policy brief]. University of California, Berkeley. https://gspp.berkeley.edu/archived/files/page/Quality-Assessment-of-VM0048--July-2024--BCTP-Policy-Brief.pdf

22 Verified Carbon Standard. (2023). *AFOLU Non-Permanence Risk Report Excel Calculation Tool, v4.2.* https://verra.org/documents/afolu-non-permanence-risk-report-excel-calculation-tool-v4-2-updated-6-dec-2023/

The making of a carbon credit on the Verra registry

Verra's **Verified Carbon Standard (VCS)** [23] – Verra's carbon crediting program including rules, requirements, and procedures for all methodologies, projects, and auditors.

Verra's **Climate, Community & Biodiversity Standard (CCB)** [24] – Verra carbon projects can co-register under Verra's CCB standard to receive certification that it meets Verra's standard for community and biodiversity benefits. This registry works like the Verified Carbon Standard, with criteria and auditing. Often, project developers will register their projects with VCS and CCB at the same time, using the same project documents and auditor.

Tumring is certified under CCB, and North Zamari Wildlife Sanctuary and Dong Hua Sao National Protected Area project documents indicate intentions to request CCB certification.

Each Verra project proceeds through the following steps:

- **Project Description Document** – The project developer (or hired consultant) describes the project and how it meets the eligibility requirements of the chosen methodology, plans to monitor and calculate emission reductions according to methodology requirements, and estimates the total credits expected to be produced over the life of the project (30 years for all three pilot projects). The project description also presents the results of stakeholder consultations, as required by the VCS Standard and methodology.
- **Validation Report** – Third-party auditors, certified by Verra and hired by the developer, assess whether the project meets all Verra methodology and Standard requirements and therefore may be registered as a Verra project. The auditor reviews the project description document and performs a site visit.
- **Project registration** – Verra reviews all documents and can register the project based on a positive validation report, adding it to its project registry.[25]
- **Monitoring Reports** – Once a project is registered, the project developer monitors the outcomes of their project and calculates emissions reduced and credits to be generated according to the monitoring plan laid out in their project description document. Monitoring reports for REDD+ projects are required at least every five years.
- **Verification Reports** – The project developer hires a certified auditor to assess whether the monitoring reports meet Verra requirements. Auditors review the reports, including all emissions reduction calculations, and conduct a site visit.
- **Credit issuance** – Verra issues credits to the project developer based on a positive verification report, charging the developer a fee per credit issued. The developer can use the credits themselves or sell them to others.
- **Credit retirement** – Credits can be purchased and used by companies, universities, individuals, and others to meet an emissions target instead of reducing their own emissions, or otherwise to compensate for their own emissions. Credit owners must inform Verra when credits are applied to an emissions target so Verra can retire the credits to avoid double counting. Verra keeps track of who owns credits and who retires them.

23 More information on VCS can be found at: https://verra.org/programs/verified-carbon-standard/vcs-program-details/

24 Verra's Climate, Community & Biodiversity Standard: https://verra.org/programs/ccbs/ccbs-program-details/

25 Verra's registry: https://registry.verra.org/verra/public

While the above reports are typically available on the Verra project webpages, supporting documents like map files and credit calculations are reviewed by auditors, but are often not released publicly.

Article 6 of the Paris Agreement

Article 6 of the Paris Agreement allows countries to trade in mitigation outcomes. If one country reduces its emissions more than their commitment, that country can sell their excess reductions to another country, allowing countries to invest in emissions reductions globally to meet their domestic targets. Article 6 defines two types of trading in mitigation outcomes: **Article 6.4** functions like the voluntary carbon market registries, based on UN standards, methodologies, third-party audits, and credit issuance and trading. **Article 6.2** allows countries to sign bilateral agreements and have wide flexibility on what activities are supported and how emissions reductions or carbon removals are estimated with minimal oversight.[26] Under both Article 6.2 and 6.4, the country paying for the reductions can use those reductions towards their own Paris Agreement targets, and the host country where the reductions take place must adjust their own targets to be more stringent by an equivalent amount (called a **corresponding adjustment**) so those reductions are not double counted.

Korea's use of Article 6 to meet its Paris Agreement contribution

For its 2030 Paris Agreement contribution, Korea intends to achieve 37.5 million tons of reductions abroad — roughly 10% of its total reduction commitment. It plans to secure approximately nine million tons of this reduction, about 30%, through REDD+ projects in seven countries under Article 6.2 for use by the government and the private sector. In August 2023, the government enacted the Overseas Forest Carbon Emission Reduction Act, establishing the legal framework for advancing REDD+ projects.

Korea is currently advancing a jurisdictional-scale project covering 1.5 million hectares in Phongsaly, northern Laos. Furthermore, agreements have been finalized to implement projects covering 6.3 million hectares in Honduras, 2.7 million hectares in Vietnam, and 3.5 million hectares in Guatemala by 2030.

To date, Korea's REDD+ projects have moved forward without much oversight by the National Assembly or attention by civil society. This is despite ongoing criticism from the international community on the actual reduction effects of REDD+ projects and their history of indigenous rights infringements and community conflicts. Korean civil society groups have expressed concern that using large volumes of low-integrity ("hot air") credits from REDD+ projects to meet Korea's Paris Agreement contribution could weaken incentives for domestic emission reductions. This is because, in accordance with the principles of the Paris Agreement, international reductions should remain supplementary to domestic ones, yet the Korean government plans to utilize international credits to the maximum extent to minimize the reduction burden on its industrial sector.

26 Lezak, S., Zaman, S. T., Johnstone, I., Haya., B. K. (2025). UNFCCC carbon trading could undermine global climate action. *Nature Climate Change, 16,* 8–9. https://doi.org/10.1038/s41558-025-02517-5

Korea's three pilot REDD+ projects

The Tumring REDD+ project in Cambodia (VCS 1689) registered as a VCS project in 2020 and was issued 645,410 credits one year later for its first reporting period, spanning 2015-2019. The project is currently late to verify its second reporting period covering 2020-2024. The North Zamari Wildlife Sanctuary in Myanmar (VCS 1848) is listed on the VCS registry and is currently applying to Verra for registration. Its first registration request was denied in 2025 due to the project being in violation of applicable law.[27] Dong Hua Sao National Park in Laos is preparing to request registration. Key details for each project are listed in Table 1.2.

Table 1.2. South Korean Government-led Pilot REDD+ Projects.

Project Name	Country	Metho-dology	Verra ID	Size (ha)	Project Lifetime	Issued Credits	Location	Verra Status
Tumring	Cambodia	VM0009	1689	66,645	1 Jan 2015 ~ 31 Dec 2045	645,410 tons (1st period: 2015-2019)	Kampong Thom Province	Late to verify 2020-2024
North Zamari Wildlife Sanctuary	Myanmar	VM0006	1848	96,888	3 June 2016 ~ 2 June 2046		Bago Region	Registration requested; first registration request was denied 12-2025
Dong Hua Sao	Laos	VM0048		93,935	1 Jan 2023 ~ 1 Jan 2053		Champasak Province	Project Description under revision, registration not yet requested

27 Verra. (December 12, 2025). [Letter to SCS Global Services and Terra Global Capital RE: Project 1848, Korea – Myanmar Joint - Bago Region REDD+ Program, with North Zamari Wildlife Sanctuary: VCS Registration and CCB Validation approval request denied]

2. Cambodia: The Tumring REDD+ Project

Summary of findings and recommendations

Findings

1. **The project failed to address the underlying drivers of forest loss while, in many instances, the Forest Administration exacerbated rather than reduced deforestation pressures.** While the Project Description acknowledged a mix of large- and small-scale causes of forest loss, project activities failed to address either. Migrant driven deforestation continued and local farmers displaced from mid- and large-sized plantation agriculture continued to clear land.

2. **Project activities to mitigate the proximate causes of deforestation through livelihood alternatives were largely unsuccessful.** Project activities that aimed to improve agricultural yields of smallholders and enhance tenure rights appear to have yielded little results. So, too, did attempts to produce and market viable forest products that would provide an alternative income to deforestation-based livelihoods. Funding for conservation efforts through community forest groups has been suspended.

3. **Much of the project area has been deforested over the last decade.** Extensive forest clearing in the project area highlights the project's lack of success in providing alternatives.

4. **Eight of the 12 Community Forests located inside the project area maintained their pre-project level of forest. The Forestry Administration's conflictual relationship with Community Forest Committees, however, undermines the project's ability to take credit for this.** The Forestry Administration provided material support for Community Forest Committees inside the project area, yet it also undermined their operations through its management of logging operations and land concessions in and around the project area, as well as its conflictual relationship with grassroots community forestry in the area.

5. **Project law enforcement efforts, on the other hand, have had significant negative impacts on smallholders.** Throughout the project implementation period, the Forestry Administration confiscated farming equipment and destroyed crops and housing of poor smallholder farmers.

6. **The project appears to have generated credits far in excess of its actual impact on forest loss.** We quantitatively assessed the impact of the project on deforestation by comparing deforestation in the project area with that on similar lands using causal inference methods and remote sensing imagery. This analysis found little evidence that the project reduced deforestation. We also found that the project's risk rating, based on under-estimations of both social and natural risk, issued excess credits to the project developer.

7. **The Tumring case illustrates the hazards of REDD+ projects that focus their efforts on smallholder farmers and fail to engage economy-wide drivers of forest loss.** Like the other projects in this study, Tumring draws a

tenuous line between planned and unplanned deforestation and, in attempting to address only the latter, ignores major drivers of deforestation in the landscape where it operates. This compromises its effectiveness in multiple ways, highlighting both the risks of localized REDD+ efforts and the need to address drivers of deforestation at the scale at which they operate.

Recommendations

Tumring REDD+ Project

1. **Credits generated by the Tumring project do not represent real emissions reductions and should be nullified.**

2. **Commission an independent investigation of alleged law enforcement violations**. KFS should fund an inquiry fully independent of Cambodian authorities and REDD+ actors, with compensation for affected people if abuses are confirmed.

3. **Keep funding the nine functioning Community Forests.** Funds should go directly to communities for patrolling, road and trench building, community organizing, and closer ties with the Prey Lang Community Network.

General Recommendations for KFS

1. **Be very cautious about future REDD+ support in Cambodia.** KFS should keep backing efforts to reduce deforestation in Cambodia but treat Tumring as a lesson that REDD+ carries high financial, political, and social risks.

2. **Limit funding and authority given to government agencies.** The more unsupervised control the Forestry Administration and Ministry of Environment hold, the higher the risks and the weaker the environmental outcomes.

3. **Fund community and Indigenous networks instead.** Lowland networks such as Prey Lang and Preah Prey Ruka, and upland Indigenous networks such as NKN, Krong Nyung, and Poom Wang, have strong conservation records. They are also linked to Indigenous Communal Land Committees that legally own significant forest areas.

4. **Involve these networks throughout the project cycle.** Network members should take part in design, implementation, and evaluation.

2.1 Introduction

The Tumring REDD+ offset project[28] covers 66,645 ha in Kampong Thom province, central Cambodia, putatively for the period 2015–2044. The project area is a mixture of Community Forests and state forests that are sandwiched between the Prey Lang Wildlife Sanctuary to the east, and a mosaic of large rubber plantations and smallholder agriculture to the west (Figure 2.1). Both the Community Forests (comprising one third of the project accounting area) and the state forests are under the jurisdiction of the Forestry Administration. The project was developed in the late 2010s by the Forestry Administration and Wildlife Works, a US-based public-benefit corporation focused on market-based conservation. It was validated in 2018 under Verra's Voluntary Carbon Standard and Climate, Community and Biodiversity standards using Verra's VM0009 REDD+ methodology, which Wildlife Works authored. The first verification occurred in 2020, covering the period 2015-2019, and resulted in Verra issuing the project 645,410 carbon credits. The project was given the (then) lowest possible non-permanence risk rating of 10% as project proponents argued that the project area is secure due to its legally protected status under the authority of the Forestry Administration. Accordingly, 10% of all credits were to be set aside in the insurance buffer pool in case of project reversal.[29] Wildlife Works left the project in 2021, leaving the Forestry Administration the sole proponent. Verra lists the project on its website as "late to verify" given its failure to file a second verification report for the period 2020–24 that was due in 2025 (Figure 2.2).[30]

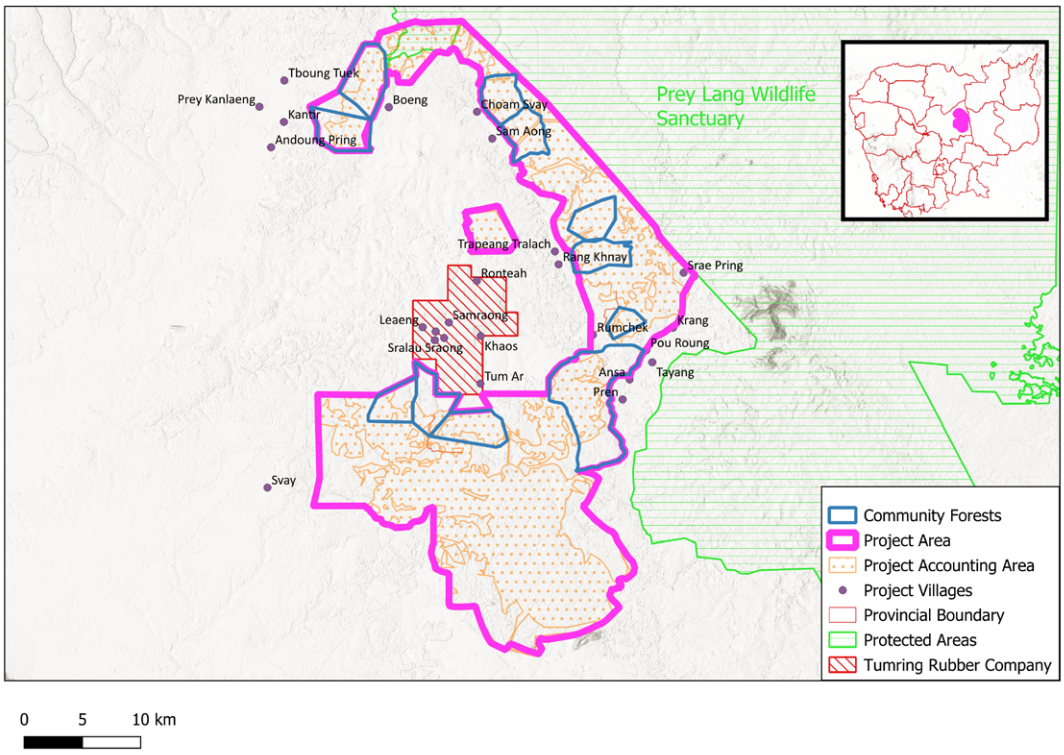

Figure 2.1. Tumring REDD+ Project Area.

28 The Tumring REDD+ project and its project documents can be found on Verra's website here: https://registry.verra.org/verra/public/program/VCS/projects/1689

29 Wildlife Works. (2018). Project Description (p. 96)

30 See the Tumring REDD+ project page: https://registry.verra.org/verra/public/program/VCS/projects/1689

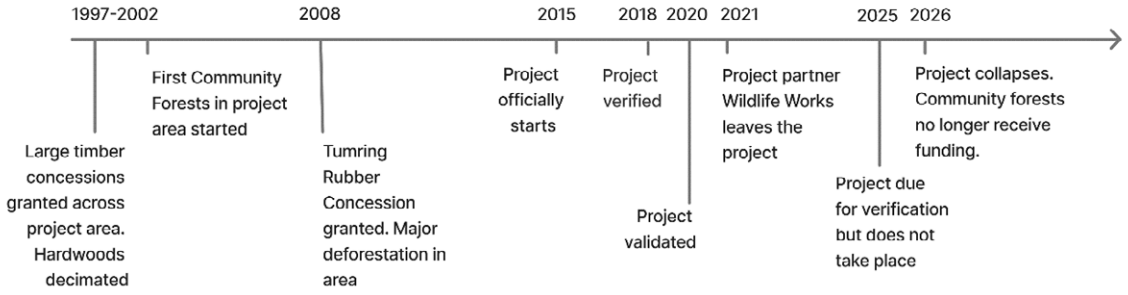

Figure 2.2. Timeline of the Tumring REDD+ project.

Like the other two projects examined in our study, Tumring is classified as an "Avoided Unplanned Deforestation" REDD+ project, stemming from a mix of small-scale farming and "lack of sufficient land-use planning" underpinning larger commercial operations.[31] The 2018 Project Description Document specifies the causes of forest loss as the result of "highly unsustainable … small-scale farming techniques used by the vast majority of local communities in the Project area" as well as "substantial immigration from lowland provinces," with migrants "seeking new land for agriculture mostly through illegal small-scale forestland clearing" and the "very rapid and extensive deforestation in the project area" by commercial crop cultivation and large-scale agro-industrial plantations "like rubber and cassava."[32] Selective logging and forest burning are also subsequently mentioned as additional drivers.[33]

The Project Description outlines a series of project interventions aimed at addressing smallholder-driven deforestation "by working with communities to limit their land clearing," including generating alternative livelihood opportunities.[34] The project involves four main activities: (1) support for existing Community Forests and the creation of new ones, and strengthening the "skills and resources" of a community forest ranger force; (2) forest-focused livelihood support through technical and budgetary assistance to resin and honey collectors to help with product marketing; (3) agriculture-focused livelihood training "to implement intensive agriculture"; and (4) support for community healthcare. The Project Description also mentions its aspirational "long-term strategic action plan to address underlying causes of drivers of deforestation and forest degradation in the Project area such as strengthening effective forest land-use planning, managing the influx of migrants, and promoting effective stakeholder engagement and participation in addressing the actual deforestation and forest degradation in the Project Area," as well as a plan to "introduce an agricultural land titling system" to address tenure insecurity.[35]

Our assessment is based on a combination of field investigation, document research, and remote-sensing analysis. We first identified deforested areas by examining satellite imagery from 2025 and before, using project boundaries and the accounting area shown in the Project Description. We identified nine main areas where deforestation had occurred and conducted surveys in these areas in mid-2026 (Figure 2.3). We surveyed 80 project-area residents actively involved in farming (either as landholders or agricultural laborers) within the project accounting area to better understand the

31 Wildlife Works. (2018). Project Description (pp. 7-8, 35)

32 Wildlife Works. (2018). Project Description (pp. 7-8)

33 Wildlife Works. (2018). Project Description (p. 27)

34 Wildlife Works. (2018). Project Description (p. 8)

35 Wildlife Works. (2018). Project Description (pp. 8, 37)

drivers of deforestation and the outcomes of project interventions. In addition, 12 interviews were held with Community Forest heads to better understand their perspectives on successes and failures of the project; two interviews were held with members of agricultural cooperatives, and one interview was held with a Forestry Administration official in Tumring.

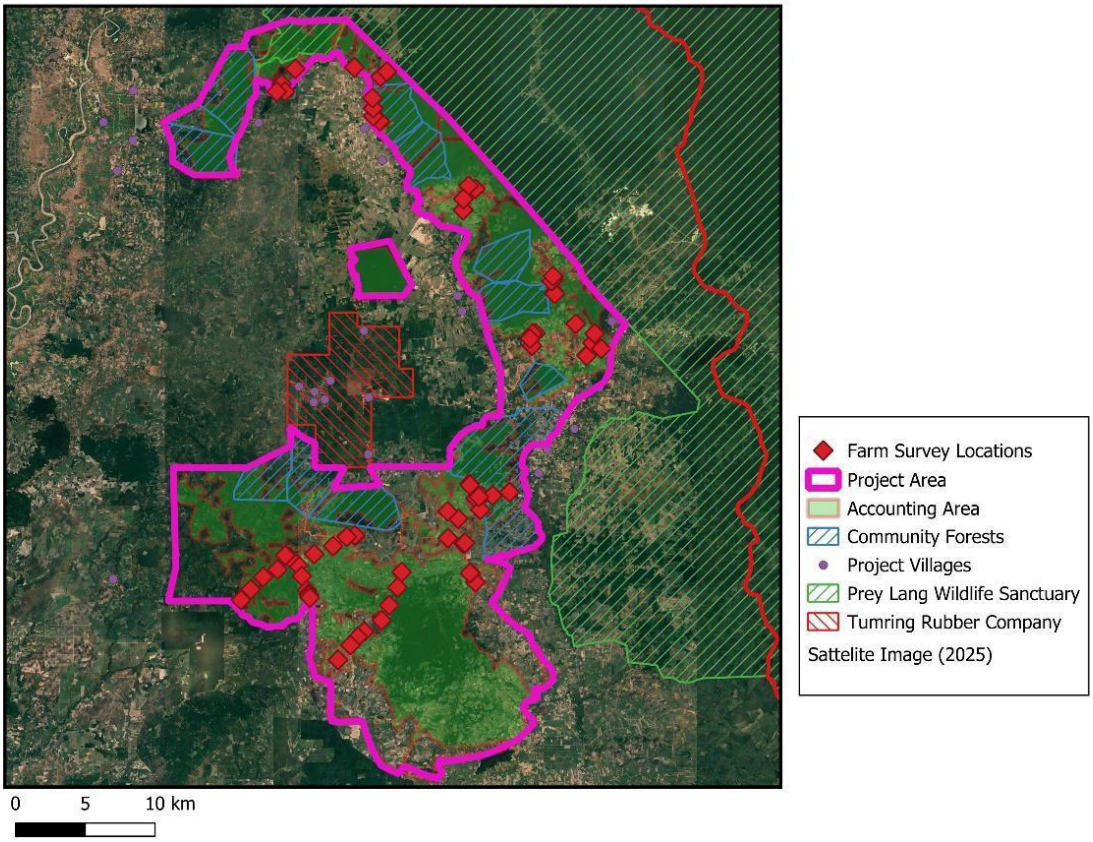

Figure 2.3. Deforestation hotspots and farm survey locations.

2.2 Historical, Political, and Institutional Context

In this section, we explain the wider economic and institutional context within the project operates, as well as provide additional details about the project landscape that are essential to understand the findings below. We first present the wider economic context of poor and land-scarce farmers who have cleared land in the project accounting area, and who often find themselves in conflict with the Forestry Administration. We then turn to the Tumring area itself, describing how the interactions of wartime displacement, concessions for logging and plantations and, more recently, community-organized forest management create the complex social landscape in which the project operates.

Forests as agricultural frontiers. Starting in the early 1990s, Cambodia's transition from a largely subsistence-orientated economy to an export-oriented market economy created contradictions that deeply shape patterns of deforestation today. As the rural subsistence economy was re-assembled into a capitalist-market economy under conditions of inequity and weak governance, rural producers have faced profound pressures. Rising land and food prices

alongside stagnating incomes have pushed people from their rural farms[36] or forced them to subsist on small patches of land.[37] At the same time, rural incomes have become increasingly dependent on a mix of market-oriented commodity crops and wage labor. Without adequate jobs in the non-agrarian sector, many rural people try to compensate for low incomes, debt, and high farming input costs by claiming lands at the forest frontier, often for cash-crop production.[38] These farmers often find themselves in confrontation with state conservation agencies who view these people as illegal state-forest clearers. More broadly, the desperation of these farmers is heightened by state economic policies that ignore the plight of smallholder farmers, a predatory debt industry with high interest rates, and a land tenure system that is often opaque and arbitrary.[39]

The Forestry Administration, Logging, and Land Concessions. The Forestry Administration, a section of the Ministry of Agriculture, Forests and Fisheries, was historically a leading agency in forest management, but has increasingly ceded power to the Ministry of Environment.[40] During the 1990s, both institutions were responsible for approving and monitoring logging concessions within the forested areas of the country, concessions wherein developers frequently logged beyond their approved boundaries.[41] After conflict with the World Bank over the eviction of an independent forest monitor connected to a Bank project, the forestry concession system was formally disbanded in 2002.[42] Shortly thereafter, a new class of large-scale "economic land concessions" was created, facilitating a second round of concessions, this time putatively for agriculture on cleared and "degraded" forestland. These new concessions were managed under the jurisdiction of the Forestry Administration, creating a mechanism by which logging — including the mass harvesting of hardwood trees and the clear felling of largely intact forest areas — continued into new landscapes.[43] By the time of a 2012 Prime-Ministerial moratorium, resulting from major unrest by dispossessed farmers, the new concession system covered over two million hectares.[44]

Community Forestry. Over the last two decades, foreign donors and major conservation organizations have nonetheless continued to work with the Forestry Administration.[45] One reason for this was the establishment and promotion of a large-scale, state-backed Community Forest system.[46] Coming at a time when conservation was reeling globally from widespread criticism over "fortress conservation" approaches that construed rural communities as forest destroyers,[47] community forestry promised a more people-centered pathway, delivering conservation

36 See Lak, C., & Luy Ung, T. (2025). Cambodia's Economic Transformation: Pathways to Diversification, Competitiveness, and Resilience. Konrad-Adenauer-Stiftung. https://www.kas.de/en/web/kambodscha/single-title/-/content/cambodia-s-economic-transformation-pathways-to-diversification-competitiveness-and-resilience.

37 See for instance: National Institute of Statistics. (2023). Census of Agriculture Cambodia 2023. Statistic Release. https://www.nis.gov.kh/nis/Agriculture%20Census/4-CAC2023-Statistical%20Release%20CAC%202023%20-%20EN.pdf. This report notes that the average rural landholding is one hectare (p. 36).

38 Diepart, J.C., Ngin, C., Oeur, I. (2019). "Struggles for Life: Smallholder Farmers' Resistance and State Land Relations in Contemporary Cambodia." *Journal of Current Southeast Asian Affairs, 38*(1), 10–32. https://doi.org/10.1177/1868103419845520

39 Diepart, J.C., & Sem, T. (2018). "Fragmented Territories: Incomplete Enclosures and Agrarian Change on the Agricultural Frontier of Samlaut District, North-West Cambodia." *Journal of Agrarian Change, 18* (1), 156–77. https://doi.org/10.1111/joac.12155

40 Cock, A. (2016). *Governing Cambodia's Forests.* NIAS Press.

41 Global Witness. (2001). *The Credibility Gap – and the Need to Bridge It: Increasing the Pace of Forestry Reform*. Global Witness.

42 Global Witness. (2001). Deforestation without Limits. Global Witness. https://landportal.org/library/resources/eldisa12497/deforestation-without-limits-how-cambodian-government-failed-tackle

43 Davis, K. F.,Yu, K., Rulli, M.C., Pichdara, L., D'Odorico, P. (2015). "Accelerated Deforestation Driven by Large-Scale Land Acquisitions in Cambodia." *Nature Geoscience, 8*(10), 772–75. https://doi.org/10.1038/ngeo2540

44 LICADHO. (2026). "Cambodia's Concessions." Phnom Penh. http://www.licadho-cambodia.org/land_concessions/

45 Milne, S. (2022). *Corporate Nature: An Insider's Ethnography of Global Conservation*. University of Arizona Press.

46 See for example: FAO. (2021). *Cambodia Strengthens Community Forestry.* https://www.fao.org/in-action/eu-fao-flegt-programme/from-the-field/stories-details/ru/c/1370481/

47 Büscher, B. (2025). "The Great Conservation Tragedy? A Critical Reflection of (Neo) Protectionism in Relation to the '30× 30'Global Biodiversity

outcomes while also attending to the needs of poor who depend heavily on forests for livelihoods. Community Forests are state recognized forest sites that give management rights to local communities, but where farming and forest clearing is prohibited. A formal request from a local Community Forestry Committee must be approved by the Foresty Administration. From the early 2000s through the mid-2010s, significant donor funding flowed into Cambodia's Community Forest system, leading to the establishment of Community Forests across the country. Registration of community forests was, however, highly dependent on donor funds. To date, 300,000 hectares of Community Forest have been registered, although the area of remaining Community Forests is about half that.

One reason for the success in rolling out formal Community Forestry was that grassroots community-led forest conservation operations were taking place across the country. These operations were an organic response to rapid, nation-wide deforestation, including concession-driven forest destruction. The Prey Lang Community Forestry Network, located east of the project area, exemplified this dynamic but was hardly alone.

REDD+. When REDD+ arrived in Cambodia in the early 2010s, the Forestry Administration tried to position itself as the leading institution to deliver REDD+ projects across the country. Along with a partner NGO, it played a decisive role in the country's first REDD+ project, implemented through 13 Community Forests in Oddar Meanchey province. The project started in 2010 but had already encountered major difficulties by 2015. Several Community Forests were cleared by armed soldiers during a border conflict, and the project ran out of money. Although it continued through one verification period, field research showed that most of the Community Forests eventually collapsed, and most of the activities described in the Project Description had never been implemented.[48]

In 2016, the Royal Cambodian Government underwent a major institutional reform wherein forest lands under the jurisdiction of the Forestry Administration were transformed into Wildlife Sanctuaries or national parks and moved under the jurisdiction of the Ministry of Environment. The Forestry Administration maintained jurisdiction over Community Forests and "economic land concessions" but suffered both major budget cuts from the state treasury and the loss of external conservation funding, as most conservation finance (including REDD+) shifted to the Ministry of Environment. Tumring thus remains the sole REDD+ project under the Forestry Administration; the others — six active and two under development — are all run by the Ministry of Environment.[49] While the Forestry Administration has thus lost most influence over REDD+ nationally, Tumring usefully illustrates the tension between the decline of the formal Community Forestry system (as donors and NGOs have increasingly re-embraced "fortress"-style conservation favoring law enforcement, patrolling, and evictions[50]) and the grassroots community forestry efforts that emerge organically from local livelihood struggles at the forest edge.

REDD+ projects in Cambodia, whether under the Forestry Administration or Ministry of Environment, have attracted controversy. In a detailed report, Human Rights Watch accused the Southern Cardamom REDD+ project of burning down poor migrants' homes, arresting Indigenous people for farming their own lands, and even torturing an Indigenous

Framework." *The Journal of Peasant Studies 52*(3), 439–60. https://doi.org/10.1177/27539687261452259

48 REDD+ Monitor. (2018). "*Guest Post: Oddar Meanchey communities 'have long been abandoned.' The Fern report correctly raises a number of difficulties and challenges with carbon offsetting generally and REDD+ in particular.*"https://reddmonitor.substack.com/p/guest-post-oddar-meanchey-communities

49 Quartson, P., Haya, B. K., Bernard, T., Abayo, A., Rong, X., So, I. S., Elias, M. (2026). Voluntary Registry Offsets Database v2026-06. Berkeley Carbon Trading Project, University of California, Berkeley. https://gspp.berkeley.edu/berkeley-carbon-trading-project/offsets-database

50 Brook, J. (2023). "Burning Homes in the Name of Conservation: NGO Wildlife Alliance Cracks Down on the Poor." Camboja News. https://cambojanews.com/burning-homes-in-the-name-of-conservation-ngo-wildlife-alliance-cracks-down-on-the-poor/

man.[51] The Phnom Samkos REDD+ project was also reported to involve the mass burning of farmers' homes and crops.[52] The new Lumphat REDD+ project has been described in similar terms — failing to properly conduct free, prior, and informed consent (FPIC) activities with Indigenous communities and seeing arrests and harassment of Indigenous people for farming their own lands.[53] As we elaborate below, the Tumring REDD+ project — in both its successes with community forestry and its failure to escape fortress conservation — reflects both strands of REDD+ governance.

The Tumring Landscape. Wartime displacement created land tenure conflicts, the legacies of which sit at the heart of the Tumring project. In the 1970s, as the Second Indochina War intensified, people were displaced from homes and farmlands, initially by US bombing campaigns and, subsequently, relocation policies of the Khmer Rouge. In 1979, some villagers were convinced by the Khmer Rouge to flee to the Thai border, although most villages waited for the arrival of the Vietnamese liberating forces and were subsequently evacuated to the district capital of Sandan. During the 1980s and early 1990s, local authorities prevented many of the villages in the project area from returning to their original villages for two reasons: firstly, as Khmer Rouge forces still operated in the wider Prey Lang landscape east of the project area, authorities feared people might be attacked by, or possibly join, the Khmer Rouge. Secondly, in order to provide basic services (and food rations), authorities preferred their co-location in larger towns. By the mid-1990s, when the Khmer Rouge were undergoing their "second life,"[54] several villages in the project area where people had returned were once again evacuated as Khmer Rouge forces attacked local markets (in Srey Pring, Krang, Tayang, Pou Rong, and Ansa villages).

When villagers returned for the second time, they were confronted with two related issues. First, by the mid-2000s, the Forestry Administration claimed that all forests were permanent state forest under their jurisdiction. This meant that villagers lost control over swidden and farming areas that had subsequently returned to forest. The second issue that villagers faced were logging concessions. At their peak in the early 2000s, forestry concessions entirely covered the project area. These concessions were all granted by the Forestry Administration and had a major impact on people's livelihoods. As one elder from Samroang village explains "[the timber company] came and just built big roads through our farms and started cutting all the large valuable trees." As villagers throughout the project area explained, by the early 2000s, people were worried about resin trees and forested areas adjacent to farms and began protesting against these companies. One such concession, the Colexim timber concession, covered what became the entire northern section of the project area.

In 2002, a new pressure on land arrived in the form of the 6,200-ha Tumring Rubber concession. Attracted to the rich ferric soils of Tumring (well-suited for rubber production), Tumring Rubber, a Khmer owned company, received a land concession from the Forestry Administration. Most of the land granted was the farmland of local villages, while smaller portions were forests managed by local villagers. Eight villages in the project area lost substantial amounts of farmland, impoverishing hundreds of families. Some were pressured into taking small amounts of money (around US$75 per hectare) while others were given compensation land inside the company boundaries (under condition that they

51 Human Rights Watch. (2024). *Carbon Offsetting's Casualties.* https://www.hrw.org/report/2024/02/29/carbon-offsettings-casualties/violations-chong-indigenous-peoples-rights

52 Sea, E. (2024). "Crackdown on Natural Resource Crimes in Pursat Ends with 23 in Jail." Camboja News. https://cambojanews.com/crackdown-on-natural-resource-crimes-in-pursat-ends-with-23-in-jail/

53 Goldstein, L., & Sea, E. (2026). "What Consultation Looks Like on a Cambodian Carbon Offset Project." https://thediplomat.com/2026/04/what-consultation-looks-like-on-a-cambodian-carbon-offset-project/

54 See: Rowley, K. (2004). Second Life, Second Death: The Khmer Rouge After 1978. In S.E. Cook (Ed.), *Genocide in Cambodia and Rwanda: New Perspectives.* Yale University Center for International and Area Studies.

produced rubber for the company). Displaced from their original lands, many families from these eight villages then began to clear new farmland in what was then "state permanent forest" managed by the Forestry Administration; much or all of this land is now inside the project accounting area.

According to Community Forest heads and local villagers, in 2010, another company was able to acquire land in what became the southern section of the project.[55] Backed by wealthy Khmer investors, the company was simply called the "95 Company" (a reference to the old Khmer Rouge name for the road into Prey Lang). According to one of our interviews, the 95 Company depleted the second- and third-grade timber from what became the southern part of the project area, then moved to the northern section to cut timber in both the permanent forest reserve and the Community Forests there. A Community Forest head we spoke to emphasized that the Forestry Administration not only failed to stop logging, but also actively protected it. So prominent was the 95 Company that it established a large sawmill in the middle of Tumring town, which has since been converted into the town's main market. It is located 50 meters from the Forestry Administration's Tumring office.[56]

Community Forests. According to our interviews, community forestry efforts in the area date from the mid-2000s, stemming initially from attempts to protect village forested lands against the Colexim timber concession. These forests would eventually become the formal Community Forests that the Tumring REDD+ project is based around. One informant, who was on the original community forest committee in the northern part of the project area, explained: "At that time, the Forestry Administration was very antagonistic with us. They did not want us to start Community Forests at all. We even had to meet secretly when the committee wanted to come together."[57] Six of the formal Community Forests in the midsection of the project area were created at this time. According to local Community Forest heads, all faced difficulties registering due to the Forestry Administration's close relationship with Colexim.[58] Five more Community Forests — three in the south and two in the northern tip of what would later become the project area — were created around 2004 with support from the local NGO *Mlup Baitong.*

The Prey Lang Community Forest Network (PLCFN) is a key stakeholder in the greater project area. Started as a community network of resin collectors and conservationists across four provinces, the network has been active for almost two decades, patrolling the large evergreen forest that makes up the project area landscape. Several of the Community Forest heads in the eastern part of the project area are PLCFN members and consider their Community Forests as a part of Prey Long. In 2011, all of the Community Forests in the Tumring project area were still a part of the contiguous forest of Prey Lang; today, only five are. Although the PLCFN has been largely successful in protecting the forest, it has faced continued pressure by state authorities. Both the Forestry Administration and the Ministry of Environment had an antagonistic relationship with the PLCFN[59] and now hold the stance that the PLCFN should be excluded from the Prey Lang Wildlife Sanctuary. One Community Forest head within the project area, who is also an active PLCFN member, commented on the attitude of the Forestry Administration: "They [local Forestry Administration officials] told me, don't bother going on patrols with PLCFN, it will only end in a problem for you."

55 Based on interviews with community forest heads and villagers

56 Interview with community forest head (O Thmor)

57 Fieldwork interview

58 Three community forest heads mentioned this during interviews.

59 See: Sotheary, P. (2020). "Ministry of Environment restricts Prey Lang Community Network's rights, says NGOs." The Khmer Times. https://www.khmertimeskh.com/50695485/ministry-of-environment-restricts-prey-lang-community-networks-rights-says-ngos/

2.3 Findings

Finding 1. The Project largely failed to address underlying drivers of forest loss rooted in tenure displacement, tenure insecurity, and economic marginalization.

Project documents do not provide a detailed analyses of the economic conditions that led people to clear forests.[60] Such an analysis is needed to determine the nature and scale of interventions necessary to address the factors that lead to deforestation. Instead, project proponents based their project activities on a simplistic, and often inaccurate, description of the causes of deforestation. Project proponents repeatedly point to locals and immigrants as the main threat to forest conservation efforts while failing to explain why particular groups and classes of people are compelled to clear forests, as we discuss above. Crucially, the project design failed to appreciate the ways in which proximate, farmer-led drivers of deforestation — land scarcity, poverty, and tenure insecurity — were created by antecedent events of conflict, state allocation of community lands to commercial enterprises, extraction of critical forest resources by government-aligned corporate entities, and economic policies that marginalized smallholders during Cambodia's transition from subsistence farming to crony capitalism.

Migration caused by land scarcity and debt. Farming inside the project accounting area was done mostly by people who had come from elsewhere, driven by their need for land. Most of the people we spoke to were cashew and cassava farmers who had come to the forest frontier to claim new lands, often after coming initially as agricultural laborers.[61] Over 60% (49 of 80) were from different districts or provinces; the rest (31 of 80) were from nearby villages. Regardless of origin, most reported having been landless or near landless before coming to the project area to farm; only four reported having more than three hectares in their hometown, while 75 had less than one hectare. Their landholdings in the project area, in contrast, averaged 2.3 hectares. Our interviews with Community Forest leaders in the project area indicated that land poverty was a common feature in the area — landlessness in their villages ranged from 20% of households (one village) to 30% (eight villages) to 40% (three villages).

Despite acquiring new lands inside the project area, the livelihoods of most respondents remained precarious. The vast majority (77 out of 80) reported supplementing their farming incomes with day labor; almost as many (71 of 80) reported being in debt.

Evictions instead of tenure security. In the Project Description, project proponents recognize the problem of tenure insecurity and say they will remedy it through the introduction of an agricultural land titling system for already-cleared farmlands.[62] The titling of agricultural lands *outside t*he project area — around Tumring town and in most satellite villages around the project area — had already occurred in 2012 during a national land titling campaign. In contrast, many farms cleared inside the project area were refused private title due to the Forestry Administration maintaining that that these lands are classified as "temporary state reserve lands"[63] even though, by 2026, some of these farms had been deforested and cultivated for over a decade. Since 2016, when the Ministry of Environment

60 For instance, in the context of Cambodia, none of the REDD+ projects (8 all together) provide a comprehensive or compelling analysis of local livelihoods that goes beyond simplistic livelihood categories.

61 Almost all (73 of 80) were growing cashew as their main crop, typically after initially being intercropped with cassava for the first two years. Four grew rubber and three grew paddy rice.

62 Wildlife Works. (2018). Project Description (p. 8)

63 Statement from interview with REDD+ officer of Tumring Forestry Administration.

took over the administration of forested areas through the creation of Protected Areas (such as Prey Lang), the legal status of degraded forest lands that are neither privately owned nor part of protected areas or Community Forests, has been unclear. Outside the project zone, this is often resolved by providing titles to small-scale farmers on formerly forested land as long as they are actively cultivating them. The Forestry Administration's actions, however, point in the opposite direction, toward a mix of eviction and enforcement for smallholders without addressing tenure insecurity or landlessness.

In at least one case, the REDD+ project was a justification for evicting farmers from lands that many had farmed for a decade, only to then re-allocate the land to a private company (Figure 2.4).[64]



Figure 2.4. Video stills from an August 2026 eviction.
Left: **A farmer argues with a Forestry Administration official who has come to evict her from farmlands inside the REDD+ project area.**
Right: **Farmers stage a protest at their lands after being informed they will be evicted from the REDD+ project area.**

Expansion of commodity cropping. Amidst land shortages and dispossession resulting from commercial investments and concessions, smallholders had no other choice but to clear forested lands to compensate for limited agricultural incomes and displacement from agro-industrial plantations. In most cases, farmers turned to commodity crops. Some villages were particularly prone to commodity booms and busts. For instance, cassava prices are correlated to the deforestation that occurred in *Prey O Thmor, Prey Neak Tala,* and *Prey Sochit* Community Forests, all in the southern section of the project area. People living in Roneam and Sralau Sraung (the participating villages of *Prey O'Thmor* and *Neak Tala* Community Forests) were already facing land shortages due to the fact that the Tumring rubber plantation surrounded their village. Villages therefore began clearing new farms in the Community Forests to the south of their villages. They grew cassava starting around 2011, when the price of cassava began to rise and middlemen and seed

64 Several villagers showed video and photographic evidence of an attempt by police and Forestry Officials to evict farmers from their land on the 3rd of August 2026 (a still from one of these videos is shown as Figure 2.4). A Forestry Administration official at Tumring also confirmed that the land under question was being provided to a private company.

distributors started coming to the village. Seven years later, when the price of cassava crashed, these farmers found themselves unable to pay back the loans that they had taken out for production. When migrants began making their way to these forests from the west, they bought land cheaply from local indebted villagers. The desperation of migrants and local villagers alike compelled them to clear land at night to avoid Forestry Administration patrols. The Community Forests of both *Prey Neak Tala* and *Prey O Thmor* have now totally collapsed. Both Community Forest heads expressed that it was too difficult going against local villagers.

Our historical analysis of the project area shows that state conservation programs never stopped commercial exploitation of timber or conversion of forests into agro-industrial plantations. Economic land concessions were carved out of the broader Prey Lang landscape, and mid-sized rubber plantations have proliferated around the Tumring Rubber Company.[65]

More generally, multiple phases of corporate commercial extraction and land conversion profoundly influenced deforestation in the project area. Logging depleted forests of valuable timber, including resin trees that were a useful source of income for local people. This undermined the project's ability to do forest-based livelihood support, as the forest commodities that project proponents imagined could become a significant source of income for poor farmers had already been largely depleted by the start of the project.[66]

Finding 2. Project activities to mitigate the proximate causes of deforestation through livelihood alternatives were largely unsuccessful.

Project activities focus on secondary rather than primary drivers of deforestation. Yet even those activities, meant to also improve community livelihoods, were unsuccessful. The result was that project interventions failed to address the livelihood crisis that both poor farming residents and migrants face which compels them to clear forests. While verified project documents claim that the project provides adequate benefits for people to give up forest clearing,[67] it does so without an analysis of land values and projected revenues, with no mechanism to deliver money to individual landholders or forest clearers. This is evident from interviews with farmers who have farms within the accounting area.

Agricultural trainings appeared to have little benefit. It is difficult to assess the quality of the agricultural trainings, but at least five of the interviewed Community Forest heads said they had never heard about trainings. In the communities where the trainings occurred, Community Forest heads reported that they failed to have meaningful results. For instance, four Community Forest heads said that the trainings distributed cassava, rice, and corn seeds but that no one was still using them. The cassava seeds in two villages were grown on lands that were subsequently sold, and the genetically modified rice seeds are created to be non-viable after repeated seeding. Chicks were also distributed as a part of these trainings, but interviewees told us that they died a few months later due to disease.

65 Both poor, local residents and poor migrants we surveyed repeatedly spoke of a class of people coming to clear lands in the project area; capitalist investors and land brokers who wanted to take advantage of cheap land and labor. We were unfortunately unable to interview any of these actors; they rarely live on the farms they own, instead using poor migrants to clear the forest for them and then plant and tend their crops. However, two field visits to rubber plantations within the accounting area (one of approximately 40 ha and one of 100 ha) confirmed the existence of these larger types of farms. Local workers did not know how they acquired such large landholdings but simply replied that they conspire with the people who manage the land (i.e., the Forestry Administration).

66 Resin had been traded to boat makers on the Tonle sap lake who used it as boat sealant. This trade has likely been going on for centuries.

67 S&A Carbon. (2020). Verification Report (p. 35)

One of the more generous accounts of the trainings from a Community Forest head was: "you can't blame the trainers for the fact that the trainings failed. People found it hard to listen and didn't follow through because they are in debt and have to just produce cashew to get enough money to feed their kids. They [the trainers] tried their best." A less generous account by another Community Forest head was: "at first many people attended the trainings, but over time people stopped going because it did not offer them anything — just telling people not to use too much herbicide." The two owners of land where the agricultural cooperatives were established (one in Tumring commune, one in Mean Rith commune) were fairly negative about the trainings. As one of these landowners (and member of the agricultural community that was set up through the agricultural trainings) put it, "at first everyone came and was interested. But they stopped coming because it was just being done so those people [project implementers] could take project money. They did not even pay me to hire my residential land for the meetings."

Biogas cookers similarly had a minimal impact on people's livelihoods. Biogas cooker systems that used cattle manure were distributed to six of the 12 Community Forests. Although Community Forest heads were generally impressed with the cookers, there were few people who were still using them. The most commonly cited problem was pipe leakage and breakage.

Savings groups were only implemented in five of the Community Forests and two of those groups collapsed. In those two cases, committee members managing these funds had run away with the savings and the funds had never been replenished. In a third savings group, which still runs, members refused to pay the interest, citing their high level of indebtedness to banks, and so the fund never grew.

Resin and honey groups meant to help people collect and market these commodities never were implemented or were inactive. Though "creating deforestation free commodities" was a major part of the Project Description, no honey groups appeared to have ever existed (as most collectors collect from Prey Lang rather than Community Forests), and only two Community Forest heads could recall the existence of a resin group that had stopped functioning as traders had long stopped purchasing natural resin in the area.

Finding 3. Much of the project area was deforested over the last decade.

The project's simplistic description of forest dynamics resulted in a set of project activities that did little to reduce deforestation. Satellite imagery analysis highlights extensive forest clearing in the project area during the last decade (Figures 2.5 & 2.6).

If one were to draw a line along the east/west boundary that delineates the project area from Choam Sach Community Forest which continues east cutting through Khum Sochet Community Forest, then approximately 80% of this area has been deforested (Figure 2.7).[68] The southern section experienced the worst deforestation, driven by local land-poor farmers displaced by earlier plantations and poor landless migrants coming from other regions. Medium-sized rubber plantations owned by wealthy investors were also a part of this deforestation matrix. The vast majority of deforestation occurred not within the Community Forests but within the "permanent forest" (sic) managed by the Forestry Administration.

68 Based on analysis of 2015 satellite image (Google Earth) vs 2025 image (Google Earth)

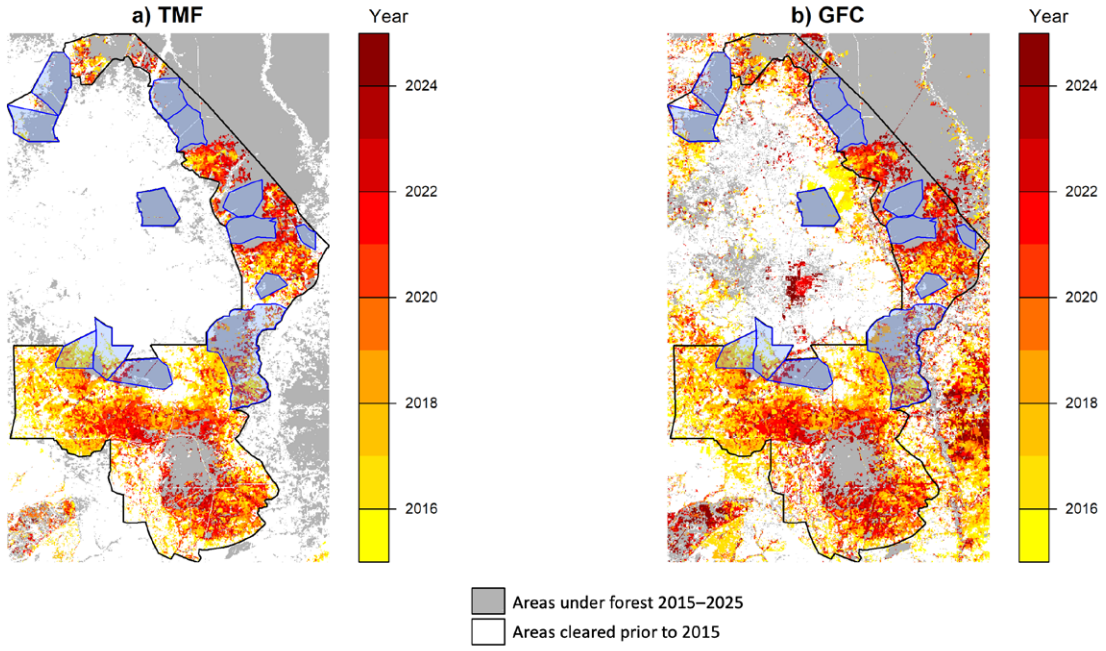

Figure 2.5. Deforestation in the Project Area by year cleared.
Tropical Moist Forest (TMF) and Global Forest Change (GFC) are separate deforestation products (see Supplementary Information B for details). Blue polygons represent community forestry areas

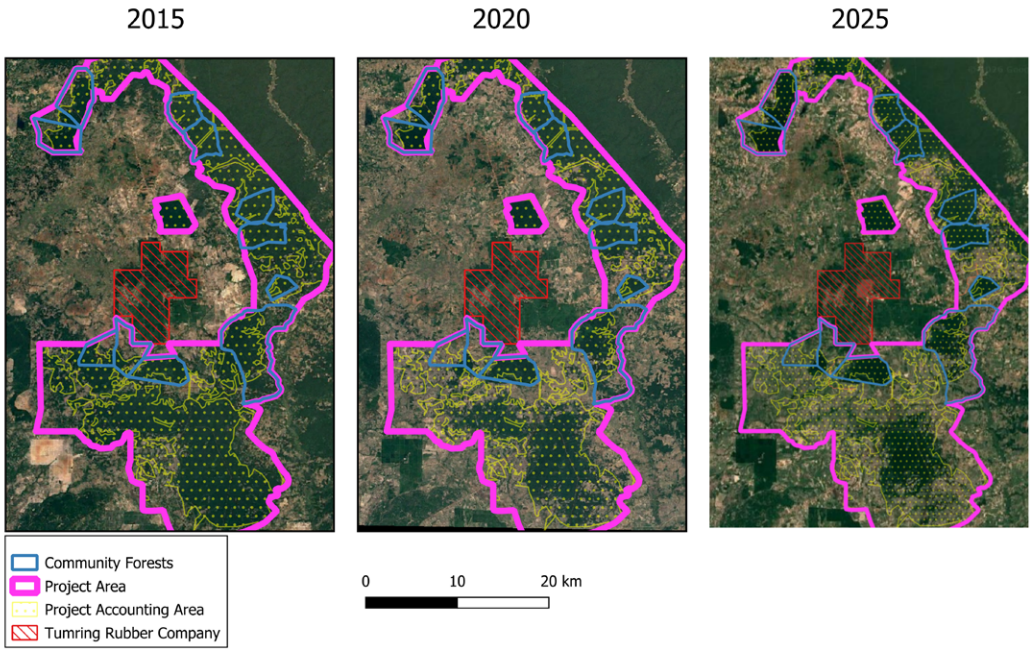

Figure 2.6. Forest loss in the project area (2015-2025).

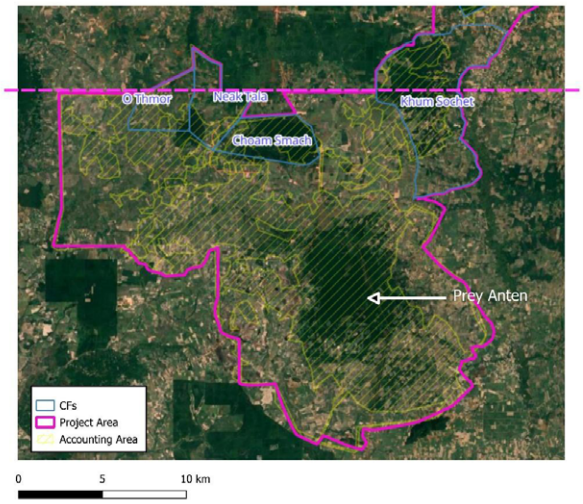

Figure 2.7. Deforestation in the southern part of the project area.

Figures 2.5, 2.6, and 2.7 illustrate another way that the project proponents' assessment of deforestation drivers and project design are based on an overly simplistic understanding of drivers. Project proponents treat smallholder conversion of forest into farmlands as spatially uniform and synchronous. Yet satellite imagery shows that deforestation in the area has clear spatial and temporal patterns. It occurs in bursts around specific hubs linked to large-scale land concessions. For instance, the creation of the Tumring Rubber Company saw deforestation rapidly increase around the concession in the 2000s and, after 2015, spread increasingly eastward through the project area toward Prey Lang (Figure 2.6).

Prey Lang is the last area to be deforested, as it is the most difficult to access and hence the five Community Forests that are still a part of this forest have seen the least amount of deforestation. The deforestation frontier had already moved through *Obos Leav, O Kranhak,* and *Tatey* Community Forests all further to the west. By the start of the project, they were no longer a contiguous part of Prey Lang as before, but small islands of isolated forests. All the land surrounding these three forests had already been titled (as private land) by the land cadastral office, and the forests themselves were delineated with roads around their boundaries. These perimeter roads and the establishment of stable permanent land uses around these forest islands closed the land frontier, meaning that by the start of the project, the risk of further deforestation was already much reduced.

Finding 4. Community Forests in the project area largely maintained their pre-project forest cover; the Forestry Administration's conflicted relationship with community forestry undermines the project's ability to take credit for this.

Throughout the project area, Community Forests were thus much better at protecting forests than the Forestry Administration. This is especially clear by looking at year-on-year forest loss inside the project area and seeing how this varies inside versus outside the Community Forest boundaries (Figures 2.5, 2.6, and 2.7 above). Both the northern and southern portions of the project area show deforestation advances throughout the 2015-25 period. In the southwest especially, Community Forest areas suffered deforestation, often contiguous with forest loss that had taken place prior

to 2015. In most other areas, however, Community Forest status provided a strong predictor of forest cover.

Our interviews highlighted both the successes of the project's financing of Community Forest patrols (until recently), but also community frustration at the shortage of project resources to support other types of necessary boundary enforcement. We explain these each in turn.

One successful intervention of the project was the patrolling efforts supported by project funds. From 2015 to 2025, Community Forests received between US$100 and US$180 per month to conduct patrols. In early years, Community Forests were also provided equipment (boots, raincoats, hammocks), though these have since worn out and were never replaced.[69] Community Forest heads were consistently both appreciative of these funds but also complained about the difficulties of patrolling. Community forest patrol groups were expected to do between three to four patrols per month, usually for at least two days per patrol (depending on the size of the Community Forest). In addition to this, Community Forest patrol groups would respond to reports of forest crime, which often meant conducting interventions at night. Patrolling has serious risks as loggers can be armed, and people clearing forest for farming have knives and machetes. All were grateful that REDD+ had resulted in a more supportive relationship with the Forestry Administration than previously and had provided funds to continue patrolling.

Community Forest heads nonetheless reported that they were frustrated that the REDD+ project had failed to provide them with funding to create roads and trenches around their Community Forests. While patrol roads and trenches were seen by local residents to be some of the few effective tangible interventions that could reduce deforestation, these were the least financially supported. Having roads around Community Forests makes it easy and effective to conduct patrols. Trenches on either side of these roads effectively block motorbikes and tractors from leaving patrol roads to access (and potentially clear) the Community Forest. Though all Community Forest heads had requested both roads and trenches, only two had received both by the time of writing. Another was slated for O Dasskor Community Forest but was stopped by Community Forest leadership due to a boundary dispute with the Forestry Administration. Choam Sach Community Forest received funding for just one kilometer of trench and road. When the Community Forest received US$10,000 compensation from electricity lines that cut through the Community Forest, they used the money to dig another 6km of trench.

Project support for Community Forests seems to have stopped in 2026. Several Community Forest heads reported that they already went through an eight-month period of not receiving patrol money in 2024. By late 2025 in some areas, and early 2026 in others, support was suspended entirely. All expressed frustration that funds had been cut and about a lack of transparency over whether and when funding might resume.

Project activities made only modest contributions to conservation efforts already in place. This research raises important questions about how effective project interventions actually were in protecting forests. The Forestry Administration takes credit for supporting Community Forests and did in fact provide material support for patrolling and other activities, even if this support has since stopped. However, all 12 of the Community Forests were established prior to the project with support and funding from other actors. Furthermore, for the first 10 years following the establishment of these Community Forests, there was little to no support from the Forestry Administration, and, in many cases, it was openly antagonistic. The project document claims that providing government-recognized titles to

69 Interview with community forest heads: Choam Smach, O Das Skor

these Community Forests will be a major outcome of the project, yet the Forestry Administration had not apparently attempted to issue these titles in the 10 years leading up to the project.

Finding 5. Project law enforcement efforts resulted in harassment, fear, and property loss for poor farmers living in the accounting area.

While the above interventions did not apparently deliver many important social benefits to local communities in the project area, law enforcement activities abounded and, in many cases, further strained the relationship between the project developers, government agencies, and local communities.

Despite a long pattern of tense and sometime violent relations between authorities and communities in this area, Tumring's FPIC process and grievance mechanism did not pick up serious concerns about the project nor alleged abuses conducted by project proponents.[70] Yet in Cambodia, people are regularly jailed for minor criticisms of government officials, and[71] forest activists in the area have been harassed and jailed for conservation activities. Chutt Vuthy, a prominent community organizer for Prey Lang Community Forestry Network who tried to mobilize people to support the very forests that are a part of this REDD+ project, was shot dead by authorities in 2012.[72] People interviewed throughout the project accounting area told us that they fear the Forestry Administration. A group of villagers in the mid area of the accounting zone (an area managed by the Forestry Administration) explained:

> We live in fear. We are poor, illiterate farmers. When we see them [Forestry Administration] coming, we run and hide. No one dares to stay around — we could be arrested or extorted for money… Sometimes they take our valuable things — motorbikes and hand tillers, or destroy our crops and our homes. But what are we supposed to do? How are we supposed to feed our kids if we don't farm this land?

Another farmer, a former soldier living north of Prey Hong Chomtut Community Forest, stated:

> I have been farming this area for 12 years. I was a soldier and fought the Khmer Rouge all over the country, from the borders of Thailand to Prey Lang. When I retired in the late 1990s, I had no land in my village just near here, so I came to claim land here. It was already degraded and all the big trees had been cut down. It still took me years to clear three hectares by hand. We all need land to survive — even if you have a salary where do you think your food comes from? But they [the Forestry Administration] continually harass me and make us live in fear. I am a former soldier who protected the nation, but they say I am an illegal forest clearer. They even extorted us for money — all the families here were forced to pay money to the Forestry Administration after they arrested and jailed one of us. They said that if we didn't pay, we would be in jail too.

Some of the most serious alleged offenses occurred around the forest area in the south known as *Prey Anten.* This area is within the project accounting zone (with some patches excised) and under the jurisdiction of the Forestry Administration. One 42-year-old woman from O Kantrok village, just on the edge of *Prey Anten,* reported that she has been repeatedly

70 Luo, J. J., & Un, K. (2022). "Organizational Strength and Authoritarian Durability in Cambodia." *Communist and Post-Communist Studies, 55*(4), 59–82. https://doi.org/10.1525/cpcs.2022.1627857

71 See for example: Narim, K. (2026). "Over 30 Arrested Since July for Border Clash Comments.", Camboja News. https://cambojanews.com/over-30-arrested-since-july-for-border-clash-comments/

72 Cambodian environmental campaigner shot dead by police - BBC News

pressured by the Forestry Administration. She was born in nearby *Tbeng* village, but her family came to clear land in O Kantrok as poverty and sickness in the family meant they had sold all their original land. In February 2024, she was working as a day laborer on a nearby cassava farm with her young daughter and husband. As she explained "even I was eight months pregnant I still had to do labor work. Yes we struggle, that is what it is like to be a poor farmer." She recalled that a contingent of 10 forestry officials and soldiers suddenly appeared nearby and laborers began panicking and running in different directions. Neither she nor her neighbors understand why the Forestry Administration threatens them except that they farm on "state land." Her husband tried to stay with her, but she convinced him to run, reasoning that the Forestry Administration was less likely to arrest a pregnant woman. Fearing for her safety and that of another young daughter with her, the woman fled but fell and was injured. According to the woman, no Forestry Administration official offered her assistance. Instead, they were busy trying to take the labor worker's motorbikes. "They only take the expensive ones" she added. Less than a week later, she was rushed to hospital where she discovered her unborn child had died.

In the same village, a 62-year-old man from a nearby district came to farm in O Kantrok 15 years ago. His wife, who had a heart attack, is paralyzed in half her body. After selling all their assets from their home to afford medical treatment, they came and cleared new land in O Kantrok. He describes the impacts of Forestry Administration activities on his livelihood as such:

> In 2019, a group of Forestry Administration and soldiers were doing a patrol and came to my farm. I fled, but they took everything from my house. They took my saucepan, my rice, my clothes, my farming equipment, my grass cutter, everything of value I have in this world. Then they destroyed my house.

But he had no choice but to keep farming, as he had no other options for income and was already highly indebted. Subsequent law enforcement patrols resulted in the loss of a motorbike and hand tiller — valued at more than US$2000.

Auditors failed to properly investigate conflicts between forestry officials and local communities or the adequacy of project safeguards. For instance, the validators reviewed "meeting notes, photographic evidence, and sign in sheets confirming the level of outreach that was performed by the project; the audit team confirmed that potential project benefits and risks were discussed during meetings."[73] Later they concluded that "no ongoing disputes or unresolved conflicts are occurring over rights to lands, territories, and resources" based on a review of the project document and meetings with project proponents and Community Forest groups.[74] The validators conclude that "[T]he audit team reviewed the project document and confirmed that the anticipated net well-being impacts of the project are predicted to be positive for all identified community groups."[75] Auditors travelled around by car, leaving the majority of farms and farmers in the accounting zone unvisited. They were also often accompanied by, and dependent on, the Forestry Administration as guides and translators.[76]

Project proponents also established a grievance mechanism, as described in the Project Description, which involves people visiting the Forestry Administration project office in Tumring. People can also provide grievances to the Community Forest committees, but for these to be logged, they must still go through the Forestry Administration office.

73 SCS Global Services (2018). Validation Report (p. 19)

74 SCS Global Services (2018). Validation Report (p. 41)

75 SCS Global Services (2018). Validation Report (p. 59)

76 In interviews with community forest heads, half could recall being visited by validators/verifiers. However, they explained that these were group meetings with Forestry Administration staff present, and so they did not feel confident to bring up concerns or criticisms of the actions of the Forestry Administration. Group interviews with community forestry committee members in Hong Chomtut were insightful. As one committee member explained: "most people see the actions of the Forestry Administration as a separate issue to the program. If they chase us away from our farms they are 'implementing the law,' which is a different issue to the REDD+ project."

Yet auditors failed to question whether people would be likely to submit a grievance to the very entity and individuals they were complaining about. Unsurprisingly, the lack of registered grievances led the validators to conclude a lack of conflict, rather than doubt the mechanism for reporting it. In our field interviews, participants expressed dismay at the way the Forestry Administration implemented the project. In Prey Hong Chumtut, the deputy Community Forest head, who knew the local Forestry Administration staff well and accompanied them on patrols, explained that he still had to run from these very same people when doing farming. He stated that, on several occasions, Forestry Administration staff had done patrols to his farmland (outside Community Forest boundaries) and threatened to take his wife to jail if she didn't cease farming there. Another man, who had been involved in the Community Forest for a decade and would do monthly patrols with the Forestry Administration, was also interviewed and explained that he encountered the Forestry Administration when he was farming his land outside the Community Forest boundary. Other farmers with him fled, but seeing as he knew them well, he simply waited for them to arrive so he could explain to them his situation. Yet rather than listen to him, they arrested him. He was forced to pay US$1500 to avoid a court case and potential trial.

It is not the first time that validators have failed to pick up on serious issues in REDD+ projects in Cambodia. The validator of the Tumring REDD+ project also validated the Oddar Meanchey and Southern Cardamom REDD+ projects.[77] The validation report for the Oddar Meanchey project fully approved the Project Description against both VCS and CCB standards even though the project was in a state of collapse at the time of validation (see above). The validation report for the Southern Cardamom REDD+ project failed to pick up severe human rights abuses that were widespread across the project and included burning of people's homes, destruction of people's property, arrest of Indigenous farmers for farming their own lands, and even a case of torture.[78]

The process of conducting Free, Prior, and Informed Consent (FPIC) for stakeholders was inadequate. Out of 80 farmers interviewed, not one could recall giving consent for the REDD+ project. Only four people had attended a meeting on REDD+ but did not clearly understand what REDD+ was. None of the Community Forest heads had clear information about REDD+ and viewed it simply as the donor who provided funds for patrolling. No one had read the Project Description document. This is understandable; even for highly educated native English speakers who have a background in REDD+, the Project Description is onerous and highly technical. Although it was translated into Khmer, it was not produced in a form understandable to farmers, in their terms, and communicating the essentials of the project. Even the Forestry Administration official in charge of implementing the project at Tumring was unable to recall key aims of the project and had no information about overall budgets or even knew whether the project was still actually being implemented. When asked what he thought was the most important achievement so far of the project, he simply replied, "destroying people's crops. It is the most effective way at stopping deforestation."

Finding 6. The project appears to have generated credits far in excess of its actual impact on forest loss.

Baseline analysis: Our field research described above found that the project had little positive effect in reducing deforestation. Project activities, which focused on reducing deforestation by smallholder farmers, were largely

77 SCS Global Services conducted the Validation Report for all three projects.

78 Human Rights Watch. (2024). *Carbon Offsetting's Casualties.* https://www.hrw.org/report/2024/02/29/carbon-offsettings-casualties/violations-chong-indigenous-peoples-rights

ineffective, while the project did little to address the underlying economic drivers of smallholder deforestation or to rein in concessions that led to deforestation in the project area managed by the Forestry Administration. Remote sensing imagery reveals high levels of deforestation in Forestry Administration-managed lands (Figures 2.5, 2.6, 2.7).

Still, the project generated over 600,000 credits from its first five years, based on the claim that it had lower rates of deforestation than the deforestation the project developers claim would likely have occurred without the project (the project baseline). Developing a counterfactual baseline of deforestation before the start of the project is inherently problematic, as the factors that lead to deforestation are complex and location specific. For instance, the factors that contribute to successful or failed outcomes of Community Forests in the project landscape include: leadership of key individuals within the Community Forest committee, the presence or absence of resin trees or spirit forests inside the Community Forest, the history of selective logging, the support, or lack thereof, from village and commune chiefs, land prices, and level of indebtedness and landlessness in the participating village. These factors have profound influence over deforestation, yet are not captured in the predictive models used by REDD+ methodologies.

Verra's VM0009 methodology, the carbon quantification ruleset used by the project, requires project developers forecast the baseline from past deforestation rates in a larger reference region. Tumring project chose the whole of Cambodia as its reference region, applying the country's annual deforestation rate from 2006 to 2014, 2.38%, as its baseline rate. The one published quantitative study of the effects of the project on deforestation we are aware of found that the project did reduce emissions in line with the credits generated.[79] However, this study based its assessment on a single causal inference approach that relied on a relatively weak method of matching project samples (i.e., treated units) to control units (i.e., areas outside REDD+ project areas) for comparison. Specifically, the matching procedure transformed continuous covariates into ordinal categories, resulting in a substantial loss of information and potentially reducing the quality of covariate matching. Moreover, the study did not report covariate balance diagnostics, making it impossible to assess whether the matching procedure successfully achieved comparability between treated and control units. The article was coauthored by an executive at Wildlife Works, one of the project developers.

We sought to further examine our field-based findings by conducting a quantitative analysis using causal inference methods and remote sensing imagery of deforestation over time. We quantitatively re-evaluated the baseline from 2015 to 2025, running our assessment 18 times using two statistical methods and two remote sensing data sources for robust results. Looking backward from the present, we compared actual deforestation rates in the project accounting area with deforestation on other areas with similar characteristics structurally related to deforestation that did not have operational REDD+ projects, thus allowing for better impact evaluation than comparing the project to a national-level baseline derived from many dissimilar landscapes from before the project started. Our results indicate that even with the conservation successes in the Community Forest portions of the project area (much of which we understand is not caused by the project itself), both the project area as a whole and its accounting area fared no better at conservation than similar areas without REDD+ projects during the same time period (Figures 2.8 & 2.9, Supplementary Information B). Our quantitative analysis therefore found no evidence that the project reduced deforestation, supporting our field-based findings.

To perform this assessment, we randomly sampled 60-hectare units both inside the project area, accounting area, and outside project boundaries using two statistical methods: the Generalized Synthetic Control Method (GSCM) by Xu

79 Pauly, M., Crosse, W., Moore, C., Brown, K., Griffin, O., Mitchard, E.T.A., Freund, J., Tosteson, J. (2024). "A holistic approach to assessing REDD+ forest loss baselines through ex post analysis." *Environmental Research Letters, 19*(12). https://doi.org/10.1088/1748-9326/ad616c

(2017)[80] and the method for causal inference with time-series cross-sectional data by Imai et al. (2021)[81] (Supplementary Information B). Results based on well-matched control sets show little evidence that the project reduced deforestation across the matching specifications. Across the six method/specification combinations examined in this study, five show no effect of the project on deforestation, and only the results from one, the causal inference methods using Mahalanobis-distance matching, suggest small (and inconsistent) reductions in deforestation. However, these reductions are limited to 2024–2025 under the 1:1 matching specification and to 2023–2025 under the 1:5 and 1:10 specifications. Moreover, the estimated magnitude of these reductions is approximately 10 hectares over a 10-year period, equivalent to only about 0.1% of the official project baseline deforestation.

For the GSCM (Xu, 2017), we first matched treated and control units using normalized pre-treatment covariates, considering 1:1 and 1:5 matching ratios (i.e., where each treated unit is compared to either 1 or 5 control units). Cardinality matching was used to improve covariate balance by retaining only treated and control units with sufficiently similar characteristics while excluding poorly matched units. GSCM was then applied to both matched samples and the full unmatched sample. Treatment effects were estimated by comparing observed deforestation with the GSCM counterfactual, with 95% bootstrap confidence intervals. Imai et al. (2021) was implemented using 1:1, 1:5, and 1:10 matching ratios, with three approaches: propensity score matching, propensity score weighting, and Mahalanobis-distance matching. These matching methods also used normalized pre-treatment deforestation and landscape covariates. All approaches were reported because none consistently achieved better covariate balance. Annual treatment effects were estimated by comparing treated units with their matched controls after the REDD+ intervention, with 95% confidence intervals based on the matching estimator's standard errors.

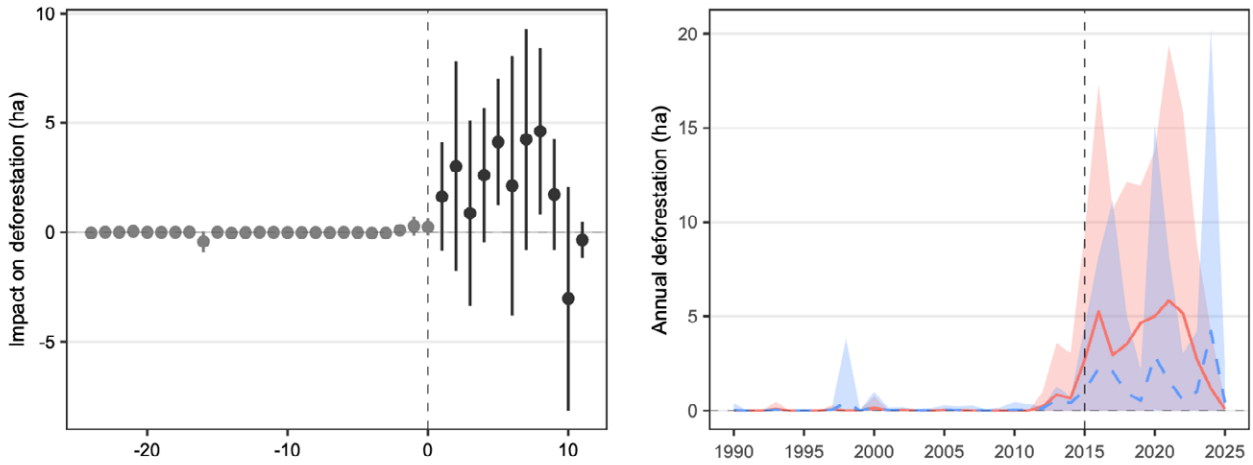

Figure 2.8. Estimated project impact on annual deforestation inside the project accounting area (ha).
The generalized synthetic control method (GSCM) (Xu, 2017) for the 1:1 matched set (left panel) shows a strong match in deforestation rate between the project and control areas before the project started in 2015 (time 0) and that more deforestation is observed in the project area compared to the controls in most years after the project start. The right panel shows the observed average deforestation of the treated units inside the project accounting area (solid red line) and GSCM estimates (dashed blue line). Shaded areas represent 95% bootstrap confidence intervals. No evidence of deforestation reduction is observed.

80 Xu, Y., (2017). "Generalized synthetic control method: Causal inference with interactive fixed effects models." *Polit. Anal., 25*, 57–76. https://doi.org/10.1017/pan.2016.2

81 Imai, K., Kim, I.S., Wang, E.H., (2021). "Matching methods for causal inference with time-series cross-sectional data." *Am. J. Pol. Sci., 0*, 1–19. https://doi.org/10.1111/ajps.12685

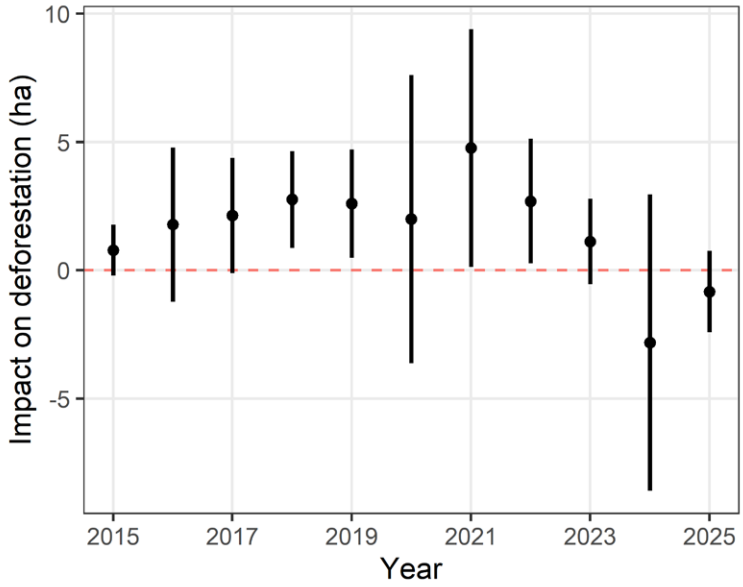

Figure 2.9. Estimated project impacts on annual deforestation inside the project accounting area (ha) compared to control areas selected.
This is based on propensity score weighting (i.e., the method that returned the best overall covariate balance results among those tested), following Imai et al. (2021). Vertical lines represent 95% confidence intervals. No evidence of deforestation reduction is observed.

Non-permanence risk reduction analysis: We also quantitatively examined the buffer pool deduction. The project put 10% of its credits aside into the buffer pool to insure against the risk that forest carbon losses prevented by the project would be lost due to major natural or human disturbance. The project developers estimated 2% risk for governance and 2% for fire, and they put aside the minimum allowed under Verra's earlier rules — 10%. However, independent modeling found that 13.3% of Tumring REDD+ project credits would need to be put aside into the buffer insurance pool to cover the project's expected natural disturbance losses over 100 years (2020-2119).[82] The model draws on past rates of disturbance in the region and climate modeling projected forward based on a "moderate severity" disturbance scenario.

While this analysis finds that 5.3% of credits issued to the project are over-credited and should have instead been set aside in the buffer insurance pool (13.3% + 2% - 10%), we notice one more contradiction in the project documents related to the non-permanence risk assessment. Project proponents emphasized that without project interventions, the project area would be converted to agricultural land. The Project Description states that: "end land-use in the greater Prey Lang ecosystem is generally observed as slash and burn agriculture. This is precipitated by several factors, the most important being immigration into the Project Area and population growth."[83] This argument ultimately justifies the project's high baseline deforestation rates. Indeed, the risk of deforestation, particularly in the southern section of the project accounting area, turned out to be very high (Figures 2.5, 2.6, 2.7). Yet, at the same time, the non-permanence risk assessment asserts that there is little to no risk of project failure because the project area is legally protected by the Forestry Administration as all land is considered part of the permanent forest estate, which cannot be legally cleared or converted to agriculture. For instance, project proponents argue within the validation document that "The

82 Wu, C., Goulden, M. L., Randerson, J. T., Trugman, A. T., Wang, J. A., Yang, L., Acil, N., Cook-Patton, S. C., Cullenward, D., Davis, S. J., Williams C. A., Anderegg, W. R. L. (2026). "A global analysis of climate-driven reversal risks in forests." bioRxiv. https://doi.org/10.64898/2026.06.19.733404

83 Wildlife Works. (2018). Project Description (p. 96)

Tumring REDD+ Project Area is protected from deforestation and unsustainable degradation by Cambodian law. The Cambodian Forest Law creates a legally binding requirement to continue the Project's management practices, namely avoiding deforestation and degradation, for perpetuity."[84] The project proponent cannot credibly have it both ways — a high baseline claiming high risk of deforestation without the project and a low buffer deduction claiming a low risk of deforestation due to the existing Cambodian Forest Law.

2.4 Recommendations

For the Tumring REDD+ Project

1. **All Tumring credits generated to date should be voided.** These do not credibly represent tangible reductions in greenhouse gas emissions.

2. **KFS should organize an independent investigation into conflict between communities and authorities**, as well as possible excesses of law enforcement activities that have occurred during the Tumring REDD+ project. Such an investigation should be entirely independent of any Cambodian authorities or other institutions involved in REDD+ projects. Should such an investigation demonstrate that alleged abuses did occur, then compensation funding for affected persons should be considered.

3. **KFS should continue to fund the nine remaining Community Forests that are still functional.** This money should directly go to the communities and focus on support and budgets for continual patrolling, funding for the continuation of road and trench building projects around the Community Forests, support for community organizing and strengthening, and support to establish closer ties between Community Forest committees and the Prey Lang Community Network.[85]

General recommendations for KFS

1. **KFS should continue to support activities that can reduce deforestation in Cambodia.** However, REDD+ as a mechanism to reduce greenhouse gases and improve people's livelihoods has high financial, political, and human rights risks in the Cambodian context. The Tumring REDD+ should be taken as a lesson and future support for REDD+ treated with caution.

2. **In general, KFS should avoid any project that either gives significant amounts of funding or implementation responsibility to Cambodian government agencies.** The more authority given to these agencies, the higher the social and environmental risks, and the less likely positive environmental outcomes.

3. **Instead, KFS should support community groups and networks that have a genuine stake in community-based conservation.** There are many networks in lowland Cambodia, such as the Prey Lang Community Network and the Preah Prey Ruka Community Network, that have a strong track record of protecting local forested areas, and whom are in need of support and funding. In upland Cambodia, Indigenous Networks such as NKN (Bunong People's Network), *Krong Nyung* (Brao, Krung, Kavet, and Lun's People's Network), and *Poom Wang* (Jarai people's Network)

84 Wildlife Works. (2018). Project Description (p. 78)

85 This recommendation comes directly from community forest heads who were interviewed as a part of this research.

are all genuine community networks conducting important conservation activities in Indigenous territories. Working through these networks also provides a strong institutional basis for conservation, not only because these networks have experience in conducting donor-funded projects, but also as they are tied into Indigenous Communal Land Committees across their territories, which are the legal owners of significant tracts of forest in the country. All of these networks are in need of funding and support.

4. **KFS should strive to include members of these networks in project activities,** from project design, to implementation, to evaluation.

3. Myanmar: North Zamari Wildlife Sanctuary

Summary of findings and recommendations

Findings

1. **The military regime (the project developer) cannot reasonably guarantee forest protection over the project life because both legal authority and actual control over the credited land are contested due to the ongoing civil war.** The project area is in a war zone: fighting has intensified in the two townships where the project villages are located, and the rival National Unity Government (NUG) has prohibited, during this period, the kinds of rights and permits this project depends on.
2. **High project risk exceeds project eligibility thresholds; if the current risk rating were used, 70% of credits would likely be over-credited.** The project's low risk rating severely underestimates natural risk and ignores the civil war and other conflicts. Independent modeling finds that natural hazard risk was severely underestimated. Despite the civil war, active armed conflict within the project area, and local conflict over land-use claims, all non-natural risks are given risk ratings of zero.
3. **The project supports military-controlled forestry efforts to prosecute an ongoing civil war, exposing the Korean government to substantial political risk.** Conservation in Myanmar has a long history of counterinsurgency, and fortress conservation is controversial even in peacetime. In the midst of a civil war, supporting a Forest Department whose capacity has collapsed and whose authority is widely contested carries substantial reputational risk for the investor.
4. **The project focuses on restricting local villagers' customary use of the forest while ignoring the largest drivers of deforestation.** The Project's own figures indicate that more than 70% of deforestation is driven by (state authorized) commercial operations. Despite this, project interventions focus rather on restricting livelihood activities of smallholders.
5. **The uncertain status of community forestry implementation is serious cause for concern.** We found no evidence that the project has supported community forestry.

Recommendations

1. **Discontinue support for the North Zamari activity** in its present form and treat the committed funds as available for re-allocation.
2. **Redirect that support to stakeholders other than the military regime that hold territory and recognize customary tenure.** Korean funds could be more appropriately deployed to support community-led forest protection and customary tenure registration in Karen National Union-administered territory, beginning with the Kawthoolei Climate Action Plan, and to support forest governance without crediting through the NUG's environment ministry.

3.1 Introduction

The North Zamari Wildlife Sanctuary REDD+ project[86] is the first project brought forward under a wider effort known as the Bago Region REDD+ Program. It was developed jointly by Terra Global Capital, a California carbon-project developer, and Myanmar's Forest Department, now under the military-controlled Ministry of Natural Resources and Environmental Conservation (MONREC), with the Korea Forest Service (KFS) as funder and strategic partner.[87] It is currently requesting registration under the Verra VCS to generate carbon credits with a project start date of 3 June 2016, as well as certification under Verra's Climate, Community & Biodiversity (CCB) Standards. It uses one of Verra's older and soon-to-be obsolete methodologies, VM0006, developed by Terra Global Capital.[88] Initially due within five years of the project start date, validation took place in 2023 after four extensions; validation reports were issued in December 2023 and updated in December 2024. Verra denied registration on 12 December 2025, citing the VCS requirement that projects comply with applicable law.[89] A resubmitted Project Description document was issued in January 2026, using older versions of the VCS and CCB standards (Figure 3.2).[90]

The project is built on multiple nested areas (see Figure 3.1). Credits are planned to come from roughly 96,888 hectares of forestland inside the sanctuary, which was gazetted out of former Reserve Forest and measures 99,165 hectares.[91] Around this sits the "project zone" where project activities take place — about 273,690 hectares of remaining Reserve Forests and twenty-six villages — and which notably includes the areas slated for community forestry. Around that is Bago Region's 3.9 million hectares. Carbon accounting runs 30 years from the project start date on 3 June 2016, with a stated intention to renew to a maximum of 100 years.[92] Over the 30 years, the project expects to achieve 1.9 million tons of CO_2-equivalent in avoided deforestation and degradation.[93]

The project's 2016 field appraisal ranked the causes of forest loss and degradation in the sanctuary as dam construction (38% of forest clearance), illegal logging by private companies (18%), and commercial plantations (15%). Small-scale agriculture, including shifting cultivation, accounted for 18%, and fuelwood and charcoal together for about 8%.[94] While forest uses by villagers rank lowest in order of forest-loss drivers, project interventions focus almost exclusively on restricting and redirecting these through five sets of interrelated activities: (1) boundary demarcation and access control via land-use survey, demarcation, fencing, checkpoints, and sign-posting; (2) enforcement, through training and equipping Forest Department patrols and mobilizing anti-illegal-forest-use teams; (3) community forestry, through which villages are to secure land-use and management rights and register community forest areas; (4) a

86 The North Zamari REDD+ project and some of its project documents can be found on Verra's website here: https://registry.verra.org/verra/public/program/VCS/projects/1848

87 Terra Global Capital. (2016). "Myanmar JREDD Program." https://www.terraglobalcapital.com/myanmar-jredd-program/ The company's earlier program page (https://dev.terraglobalcapital.com/bago-region-myanmar) expected first verification in 2021; the current page gives 2025.

88 Verified Carbon Standard. (2017). *VM0006, Methodology for Carbon Accounting for Mosaic and Landscape-scale REDD+ Projects*, v2.2. Verra. https://verra.org/methodologies/vm0006-methodology-for-carbon-accounting-for-mosaic-and-landscape-scale-redd-projects-v2-2/; Verra. (2023). "Verra Inactivates and Updates Existing REDD Methodologies."

89 Verra's public letter states that the detailed reasons were shared separately with the developer.

90 SCS Global Services. (2023). VCS Validation Report; SCS Global Services. (2024). CCB Validation Report; Verra. (2025). Denial Letter (Cites VCS Standard v4.7 §3.1.4 and CCB Program Rules v3.1 §2.5.4); Terra Global Capital. (2026). Project Description. Supplementary Information A.5 gives the full chronology.

91 Areas as stated in the Project Description, Section 2.1: the sanctuary's 99,165 hectares include 96,888 hectares eligible for crediting; the Project Zone Instance is given as 273,690 hectares.

92 Terra Global Capital. (2026). Project Description (§2.1.15)

93 Terra Global Capital. (2026). Project Description (§2.1.1); 1,928,488 tCO_2e

94 Participatory Rural Appraisal. (2016). "Sum of # acres destroyed inside Reserve Forest." Sheet 3.x.b; Refers to the former North Zamari Reserve Forest, gazetted as the sanctuary in 2014 and totaling 7,827 acres. Full figures at Table A4.

household energy and food security program via the provision of efficient cookstoves, solar units, nurseries, fuelwood woodlots, agricultural intensification, and agroforestry; and (5) income generation, through non-timber forest product cooperatives, handicrafts, micro-loans, eco-tourism, and sustainable charcoal.[95] The project plans to carry on these activities for 60 years — twice the length of its initial crediting period — as a way to reduce its risk of reversal.[96]

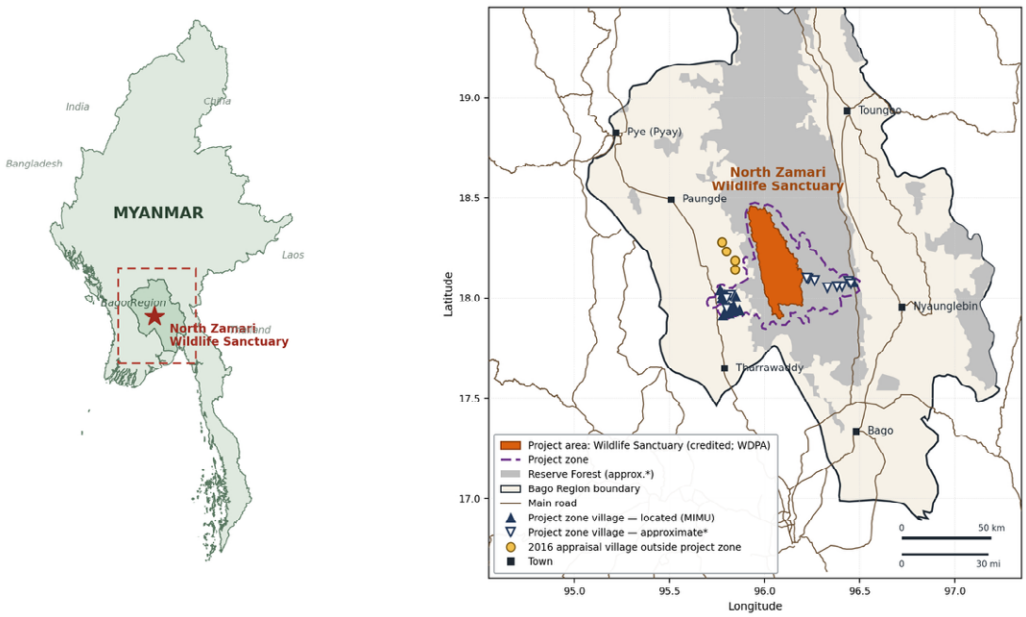

Figure 3.1. North Zamari Wildlife Sanctuary project area and project zone.
Left: Location of the North Zamari Wildlife Sanctuary within Myanmar. Right: The sanctuary and wider project zone within Bago Region, with the located project zone villages. Sanctuary boundary: World Database on Protected Areas. Villages: Myanmar Information Management Unit, with positions approximated from road-mile names where no record exists. National boundaries: Natural Earth.

The civil war in Myanmar made it impossible for us to visit the project area, both for our own security and those who would have been interviewed in the project zone. Building on over two decades of research experience in and on forest and natural resource governance in Myanmar, this case study draws on analysis of publicly available documents (both project documents and others), geo-referenced data showing the locations of specific conflict events in and around the project area, key informant interviews with relevant experts, and remotely sensed data.

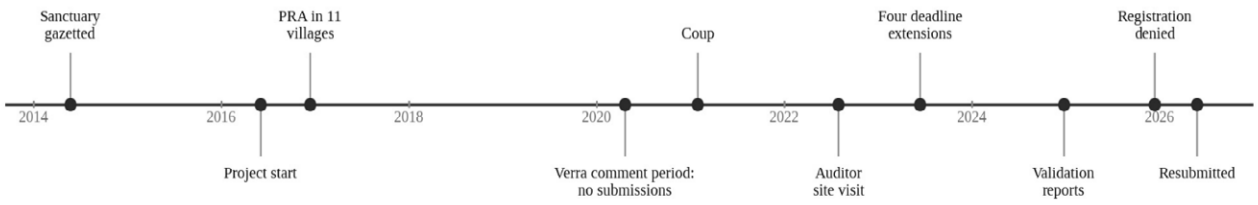

Figure 3.2. Key events in the North Zamari REDD+ activity, 2014–2026.

95 Terra Global Capital. (2026). Project Description (Tables 7 and 8); The five groups are this report's description, not the project's headings. Key pieces of groups 4 and 5 depend on the establishment of community forests (activity 3).

96 Terra Global Capital. (2026). Project Description (p. 40)

3.2 Historical, Political, and Institutional Context

The North Zamari Wildlife Sanctuary sits in the Bago (Pegu) Yoma, a range of low mountains running down the center of Myanmar between the Irrawaddy and Sittaung rivers. It is historically the country's principal teak reserve and still the largest area of forest in central Myanmar, although more than a century of logging has left much of it degraded.[97] Since the early 2010s, the KFS has been supporting REDD+ efforts in this area under the Asian Forest Cooperation Organization, of which Korea is a member. Asian Forest Cooperation Organization sources list multiple REDD+ efforts in and around North Zamari, including two pilot efforts (2011-2012, US$100,000 each), and a third readiness project covering North Zamari and two other reserved forests, initially planned for 2015-2018 but listed in late 2023 as currently under negotiation between the KFS and the Forest Department.[98]

As in the Cambodia case, REDD+ efforts overlap with the operations of powerful state logging operations even though they are not the project's stated targets. The Myanma Timber Enterprise, the state timber company located parallel to the Forest Department under the environment ministry, has long held the sole legal right to harvest, transport, and sell timber commercially from Myanmar's forests. That produced decades of over-cutting across the country, including in the Bago Yoma: harvests routinely exceeded the Annual Allowable Cut, much logging went unreported, and mismanagement and corruption cost the state on the order of a billion US dollars a year in the mid- to late-2010s.[99] A brief window of reform interrupted this mismanagement. After the National League for Democracy (NLD) took office in 2016, it imposed a one-year national logging moratorium and, decisively for this case, a ten-year logging ban specific to the Bago Yoma. That ban is the single most important legal protection over this landscape, yet it expires in November 2026, which is well inside the crediting period. After this, the range is again open to commercial harvesting in its Reserve Forests, which includes the planned community forest areas but not the sanctuary itself. The Project Description cites this ban, together with the sanctuary's change of status from Reserve Forest, as its rationale that the state timber company has no role in the program area.[100]

Those two categories, the sanctuary and the Reserve Forests around it, also determine what the people living there may lawfully do. Wildlife sanctuaries and national parks are protected by the state, in which habitation and forest use are prohibited. The 2018 Protected Areas Law allows the Forest Department's Director-General to designate buffer zones at the boundary of a protected area and to permit community forestry within them, and it requires provision for the customary rights of people living in an area proposed for protection. North Zamari was gazetted in 2014 under the earlier 1994 Wildlife and Protected Areas Law and, since the 2018 law came into force, no buffer zone has been

97 Frontier Myanmar. (2025). "Logged out: Conflict drives deforestation in Bago mountains." https://www.frontiermyanmar.net/en/logged-out-conflict-drives-deforestation-in-bago-mountains/; Hein, Z.M., Soe, P., Cox, N., Williams, C., Htun, N., Oo, T.N., Ya, Y., Htun, Y.L., K, L. (2020). "Status of two species of threatened wild cattle (*Bos gaurus* and *Bos javanicus birmanicus*) in North Zamari Wildlife Sanctuary, Bago Region, Myanmar." *Asian Wild Cattle Specialist Group Bulletin* 5.

98 Asian Forest Cooperation Organization. (n.d.). "Mitigation of Climate Change Impacts through Restoration of Degraded Forests and Ecosystem and REDD-Plus Activities in Bago Yoma Region of Myanmar." In *AfoCo Individual Cooperation Projects 2011-2012* (pp. 13-15). https://media.afocosec.org/2019/08/2011-2012_AFoCO_Individual-Projects.pdf; Asian Forest Cooperation Organization. (2018). "Mitigation of Climate Change Impacts through Restoration of Degraded Forests and REDD+ Activities in Bago Yoma Region, Myanmar (Phase II)." In AFoCO Project Report Volume 2: Individual Forest Cooperation Projects 2012-2013 (pp 81-131). https://media.afocosec.org/2018/12/2018_AFoCO_Project-Report-Individual_Forest_Cooperation_Projects_2012-2013compressed_compressed.pdf; 2012–13 AfoCO. (2023). REDD+ Fact Sheet Series: Myanmar. https://media.afocosec.org/2023/11/AFoCO-REDD-Fact-Sheet-MYANMAR_20231124.pdf

99 Forest Trends. (2025). Timber, Sanctions, and Conflict: Myanmar's Forest Sector Since the Coup. https://www.forest-trends.org/publications/myanmars-forest-sector-since-the-coup/; MTE retained US$911 million, 2014–2018.

100 Regulatory Order (FD)4(1)/04(d)(4)/(1765/2016), Myanmar Ministry of Natural Resources and Conservation (2016); EIA. (2016). "Myanmar logging ban a major step to forest sector reform." https://eia-international.org/press-releases/myanmar-logging-ban-major-step-forest-reform/; Terra Global Capital. (2026). Project Description (Table 14 and §3.1.4.5)

designated there and no provision has been made for customary rights.[101] Reserve Forest, managed in principle for state timber production, carries similar restrictions on habitation but treats extraction differently: forest produce for personal use (rather than commercial) may be taken without a permit, up to a quantity the Ministry stipulates, while charcoal and all commercial extraction require one.[102] Neither category recognizes customary tenure rights.

On 1 February 2021, the military seized power from the re-elected NLD government, installing a ruling military council. That council was replaced by another military body in July 2025. They were replaced again in April 2026, after elections from which the NLD was excluded, by a military state with the coup leader, Min Aung Hlaing, as president.[103] Within days of the coup, a new Minister of Environment was appointed, Colonel Khin Maung Yi, who held military rank and had been the ministry's Permanent Secretary under the elected government. The ministry, its departments, and its enterprises came under full military control.[104] The coup re-ignited a nationwide civil war, which added to seven decades of ethnic armed conflict over federalism and ethnic self-determination. The military regime and its allied militias are now at war with a loose coalition of ethnic armed organizations including the Karen National Union (KNU), the People's Defense Force under the NUG (National Unity Government; a parallel government formed in April 2021 by legislators elected in 2020 and ousted by the coup), and hundreds of smaller militias.[105]

The NUG now operates a parallel Ministry of Natural Resources and Environmental Conservation (MONREC) with its own federal charters and interim (i.e., current, wartime) natural-resource policy, which bans commercial logging and recognizes ethnic self-administration of forest territory.[106] The MONREC ministries of the two rival authorities claim the same forests while their armed wings fight for control. Meanwhile, the KNU has long controlled and administered eastern Bago. Most governments globally do not treat the de facto military regime as Myanmar's legitimate administration: the United States, European Union, United Kingdom, Canada, and Switzerland have all sanctioned senior military figures and military-linked resource enterprises, including the state timber company. The United States has placed Khin Maung Yi himself on its Specially Designated Nationals list, freezing any assets in United States jurisdiction and barring United States persons from transacting with him.[107] The ACLED (Armed Conflict Location & Event Data) record compiled for this report identifies 67 distinct armed groups within 50 kilometers of the sanctuary since the coup, including 32 People's Defense Force or other militias.[108] The military regime's capacity to protect forests more generally has also collapsed, as elaborated in our first finding below.

101 Conservation of Biodiversity and Protected Areas Law, Law No. 12/2018, ss. 12, 13(e), 13(g), 35, 40, 47, 53 (2018); Section 12 is a duty ("shall"), subject to Ministry approval. The buffer-zone power at s. 13(g) is discretionary. North Zamari was gazetted by Forest Department Notification 43/2014 (22 May 2014) under the Protection of Wildlife and Protected Areas LawNo. 6/94 (1994), which the 2018 law repealed.

102 Forest Law, Law No. 29/2018, ss. 17, 19, 20(e), 58 (2018)

103 ISP-Myanmar. (2025). "The SAC Ended, Power Grip Remains." https://ispmyanmar.com/st-02/; International Crisis Group. (2026). "Myanmar's New Administration: Military Consolidation, Not Transition." https://www.crisisgroup.org/brf/asia-pacific/myanmar-china/b188-myanmars-new-administration-military-consolidation-not-transition

104 Council Implementing Regulation (EU) 2021/998 (2021). https://eur-lex.europa.eu/TodayOJ/index.html?uri=CELEX:32021R0998; Council Implementing Regulation (EU) 2021/998 (21 June 2021), Annex, entry 39, https://eur-lex.europa.eu/eli/reg_impl/2021/998/oj; Switzerland, Ordinance on Measures against Myanmar (SR 946.231.157.5), Annex 1, as amended 1 July 2021.

105 International Crisis Group. (2022). "Resisting the Resistance: Myanmar's Pro-military Pyusawhti Militias." Asia Briefing No. 171. https://www.crisisgroup.org/brf/asia-pacific/myanmar/b171-resisting-resistance-myanmars-pro-military-pyusawhti-militias

106 NUG-MONREC. (2022). "Administration" & "Collaboration in the Areas Controlled by the Ethnic Revolutionary Organizations." In *Interim Resources Management Framework (Forestry and Biodiversity Sector)* (pp. 4-5). https://monrec.nugmyanmar.org/interim-resources-management-framework-forestry-and-biodiversity-sector/

107 US Office of Foreign Assets Control. (2021). "Burma-related Designations; Counter Terrorism Designations." https://ofac.treasury.gov/recent-actions/20210517; Council Implementing Regulation (EU) 2021/998 (2021). https://eur-lex.europa.eu/TodayOJ/index.html; Switzerland, Ordinance on Measures against Myanmar (SR 946.231.157.5), Annex 1, as amended 1 July 2021.

108 ACLED. (2026). Conflict Exposure Map. https://acleddata.com/

While multi-decadal histories of political conflict overshadow all three of the case studies examined in this report, it is perhaps not surprising that this issue looms especially large in the Myanmar case. This is only partly due to the current civil war which, as we explain below, significantly influences the North Zamari project landscape. In addition, the unresolved *national* question of centralized versus federal control over the country's rich natural resources predates the current conflict by decades. Natural resource politics have animated Myanmar's post-independence history in multiple ways, one being that it makes the governance of forest landscapes not just an economic and environmental issue but often a military one as well. This means that the line between conservation and counterinsurgency has become perpetually blurred, even as the dynamics play out differently in different parts of the country.

One dimension of this is that the loss of community presence inside forests has gone hand in hand with the issuing of concessions inside protected areas to state-aligned elites. For example, the military has allocated gold mining and biofuel plantations inside the Hukawng Valley Tiger Reserve in Kachin State and oil palm concessions within the proposed Lenya National Park.[109] Declaring an area "protected" does not therefore stop extraction; it transfers the decision over who extracts to the military state, much as the state timber company holds the right to harvest timber in Reserve Forests. The current violence is only the most recent manifestation of this dynamic. A 2005 national review of the protected-area system found military camps, armed insurgents, or military-backed concessions inside a substantial proportion of the protected areas it surveyed.[110] In three of the country's better-known protected areas, the military established protected areas in forests under the control of ethnic armed organizations as a means to usurp jurisdictional control and gain access to valuable natural resources.[111] Until the 2021 coup, this was largely confined to conflict-affected ethnic territories controlled by ethnic armed organizations. But the coup has intensified and extended the practice, and Bago Region is now among the most violently contested regions in the country.

3.3 Findings

Finding 1. The military regime (the project developer) cannot reasonably guarantee forest protection for the project duration due to civil war and contested legal authority and actual control over the credited land.

In the aftermath of the 2021 coup, two rival authorities now claim jurisdiction over the sanctuary and the wider project zone: the military regime through its environment ministry and the Forest Department, and the NUG through its own environment ministry. Neither administration fully controls the land proposed for carbon-credit generation. A credit

109 Woods, K. M. & Naimark. J. (2020). Conservation as counterinsurgency: A case of ceasefire in a rebel forest in southeast Myanmar. (83) https://doi.org/10.1016/j.polgeo.2020.102251; Pollard, E.H.B., Hlaing, S.W., Pilgrim, J.D. (2014). *Review of the Tanintharyi Nature Reserve Project as a Conservation Model in Myanmar*. The Biodiversity Consultancy. https://www.thebiodiversityconsultancy.com/fileadmin/uploads/tbc/Documents/Resources/Review-of-the-Tanintharyi-Nature-Reserve-Project-2014.pdf; Kachin Development Networking Group. (2010). Tyrants, Tycoons and Tigers: Yuzana Company Ravages Burma's Hukawng Valley, Chiang Mai.

110 BirdLife International. (2005). Myanmar: Investment Opportunities in Biodiversity Conservation. Yangon. https://www.burmalibrary.org/sites/burmalibrary.org/files/obl/docs2/biodiv.pdf; Rao, M., Rabinowitz, A., Khaing, S.T. (2002). "Status Review of the Protected-Area System in Myanmar, with Recommendations for Conservation Planning." *Conservation Biology 16*(2), 360–368. https://conbio.onlinelibrary.wiley.com/doi/abs/10.1046/j.1523-1739.2002.00219.x

111 Pollard, Hlaing, & Pilgrim, *Review of the Tanintharyi Nature Reserve*; Woods, K., & Naimark, J. (2020). "Conservation as Counterinsurgency: A Case of Ceasefire in a Rebel Forest in Southeast Myanmar." *Political Geography 83*: 102251. https://doi.org/10.1016/j.polgeo.2020.102251; Kachin Development Networking Group. (2010). Tyrants, Tycoons and Tigers: Yuzana Company Ravages Burma's Hukawng Valley. Chiang Mai. https://kdng.org/wp-content/uploads/2018/12/tyrants-tycoons-and-tigers.pdf

issued from this project would tell the user three things: that the forest will be protected for the 30-year crediting period, that project ownership be maintained for the entire project longevity of 60 years,[112] and that the credits put aside into the buffer insurance pool fully cover the risk that project benefits will be reversed by major forest disturbance or increased deforestation for 100 years.

The Forest Department, the sole local project proponent (now under the control of the military) has not been in a position to give those guarantees since the coup. One reason is that, in the aftermath of the coup, many MONREC and Forest Department staff joined the Civil Disobedience Movement and stopped reporting for work, and the Forestry Security Police was reportedly disbanded amid shortages.[113]

Another reason is the violence of the civil war itself, both in and around the project zone. While the eastern portion of the Bago Yoma is territory long held by the Karen National Union and was left out of the project zone by design,[114] the post-coup civil war has increasingly spilled over into the project's territory. Since the coup, nearly 1,500 armed conflict events and more than 2,400 deaths have occurred within 50 kilometers of the sanctuary boundary (Figure 3.3),[115] with violence intensifying more recently in Kyauktaga and Minhla, the two townships where the project zone villages are located.[116] The regime's army and the NUG's People's Defense Force units have clashed across the project zone. This includes areas close to the project villages. In such a context, forest-related enforcement and monitoring have fallen away, not only due to the personnel shortages mentioned above, but also because of the risk of attack and the danger from landmines.[117] With law enforcement largely absent, illegal logging has intensified across the Bago Yoma.[118]

A military regime in the midst of a civil war, especially in a region with active fighting, cannot reasonably guarantee their continued ownership and protection of the project area for the required durations.

112 Verified Carbon Standard. (2023). *AFOLU Non-Permanence Risk Tool, v4.2.* https://verra.org/wp-content/uploads/2023/10/AFOLU-Non-Permanence-Risk-Tool-v4.2-last-updated-May-3-2024.pdf (§2.2.4)

113 Forest Trends. (2025). *Timber, Sanctions, and Conflict: Myanmar's Forest Sector Since the Coup* (§3.1 and Annex 3). https://www.forest-trends.org/wp-content/uploads/2025/02/myanmars-forest-sector-since-the-coup_FINAL.pdf

114 Terra Global Capital. (2026). Project Description (§3.2.1.1).

115 ACLED. (2026, July 27). "Myanmar." https://acleddata.com/country/myanmar, with the latest event on 27 July 2025. Full figures at Table A1 and definitions, geometry, and the counting rule for armed actors at Supplementary Information A.1.

116 In January 2026, a resistance offensive reached the townships where the project zone villages are located, displacing more than ten thousand people. See: Mizzima News. (2026). "Heavy clashes erupt along old Yangon-Mandalay highway as 'Operation Aung Myin' targets election zones." https://eng.mizzima.com/2026/01/12/30169; Village-to-township allocation from the PDD's own village list (Terra Global Capital. (2026). Project Description [§4.1.1.5, Table 64])

117 Forest Trends. (2025). *Timber, Sanctions, and Conflict: Myanmar's Forest Sector Since the Coup* (§3.1 and Annex 3). https://www.forest-trends.org/wp-content/uploads/2025/02/myanmars-forest-sector-since-the-coup_FINAL.pdf

118 Forest Trends. (2025). *Timber, Sanctions, and Conflict; Frontier Myanmar. (2025). Logged out: Conflict drives deforestation in Bago mountains.* https://www.frontiermyanmar.net/en/logged-out-conflict-drives-deforestation-in-bago-mountains/https://www.forest-trends.org/wp-content/uploads/2025/02/myanmars-forest-sector-since-the-coup_FINAL.pdf; Shimizu, K., Ahmed, O.S., Ponce-Hernandez, R., Ota, T., Win, Z.C., Mizoue, N, Yoshida, S. (2017). Attribution of Disturbance Agents to Forest Change Using a Landsat Time Series in Tropical Seasonal Forests in the Bago Mountains, Myanmar. Forests, 8(6). https://doi.org/10.3390/f8060218 [covering the Bago Mountains as a whole, not just the WS]; Hein, Z. M., Williams, A.C., Soe, P., Cox, N., Htin, N.Z., Oo, T.N., Aye, Y.Y., Htun, Y.L., Yoganand, K. (2020). Status of two species of threatened wild cattle (Bos gaurus and Bos javanicus birmanicus) in North Zamari Wildlife Sanctuary, Bago Region, Myanmar, Asian Wild Cattle Specialist Group Bulletin, 5, 18–26. https://www.asianwildcattle.org/uploads/1/2/1/8/121825577/status_of_gaur_and_banteng_in_north_zamari_wildlife_sanctuary.pdf; Myint, M. N., Ngoprasert, D., Sukumal, N., Shwe, N. M., Soe, P., Hein, Z.M., Savini, T. (2024). Predator-prey co-occurrence: defining a management plan for a newly established protected area in central Myanmar, Raffles Bulletin of Zoology, 72, 135–149. https://lkcnhm.nus.edu.sg/wp-content/uploads/sites/11/2024/09/RBZ-2024-0012.pdf [recording illegal logging at 19 of 57 camera locations in 2020]

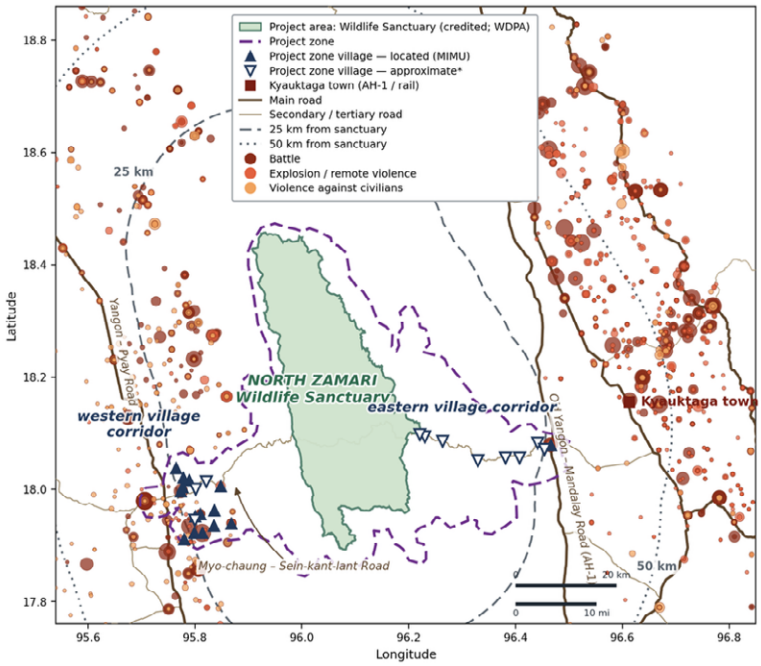

Figure 3.3. Political violence around North Zamari Wildlife Sanctuary since the coup.
Events are ACLED records of core political violence — battles, explosions and remote violence, and violence against civilians — for 1 February 2021 to 27 July 2025, from the export of 27 July 2026; symbol size is scaled to recorded fatalities. Distance rings are measured outward from the sanctuary boundary. Figures in full at Table A1.

Whether credits from the project could be lawfully sold is also questionable, as is the formalization of the community forestry rights needed to support the project's livelihood programs. Officials at the NUG's Ministry of Natural Resources and Environmental Conservation interviewed for this report said the project cannot be implemented from either side.[119] This reflects the NUG's published position in its Interim Resources Management Framework for the Forestry and Biodiversity Sector, issued in July 2022 by its natural resources ministry. This framework, covering the "interim" period of the civil war, prohibits both the permitting of "lease and use rights of forest land, including the activities of community forestry" and the "extending and issuing [of] rights on forest products extraction, business licenses, registrations and other permits issued prior to the formation of the NUG."[120]

Finding 2. High project risk exceeds project eligibility thresholds; if the current risk rating were used, 70% of credits would likely be over-credited.

The project proponents estimate the risk that credited reductions in deforestation will be lost due to major disturbance over 100 years can be covered by setting aside 11% of all issued credits into the insurance buffer pool. This risk rating comes solely from natural hazard — fire, pests, extreme weather, and earthquake; all other project risks (related to governance, enforcement, and project funding) are fully negated by risk mitigation factors, including

119 Interview with NUG-MONREC official, 1 August 2026

120 NUG-MONREC. (2022). Interim Resources Management Framework (ch. 1 §1–2, ch. 3 §6(a), (b), (f) and §7(f), ch. 4 §8–9, ch. 6 §11(c)). https://monrec.nugmyanmar.org/interim-resources-management-framework-forestry-and-biodiversity-sector/

the project area's designation as a wildlife sanctuary and the project proponent's appraisal of the strength of the management team and community engagement.[121] Supplementary Information A.2 reproduces the scoring in full along with the re-scoring analysis presented here.

In a landscape whose largest material risk is armed conflict and whose seller's claim is contested, an 11%, 100-year risk rating does not approach the true risks of the project. The Forest Department's capacity to police these forests has collapsed since the coup, night patrols have been suspended under martial law, and the logging ban that keeps commercial harvesting out of the surrounding Reserve Forests expires in November 2026.[122] Further, the civil war contributes nothing to the risk rating. The project's risk score for political risk only has two inputs: World Bank governance figures, whose score was already at the maximum of 6 before the civil war began,[123] and a credit for REDD+ participation resting on UN-REDD support through November 2020.[124] Both were accepted in the December 2023 validation and its December 2024 update, and were not removed in 2026 when the Project Description was updated.[125] Further, the largest credit is self-referential. The project reduces its risk assessment by eight points for a legally binding commitment to protect the carbon for a hundred years, but the commitment relied on is the sanctuary designation itself. In short, the forest is considered protected simply because it was *declared* protected. That protection depends on a Forest Department that, by the project's own account, cannot afford enforcement without carbon revenue.[126] Both authorities recognize the sanctuary, but that does not remove the governance risks, and the NUG has prohibited the rights and permits the project depends on (see Finding 1). The auditors found that villagers had lost access to forest products in the sanctuary yet accepted a score of zero for disputes over use rights.[127]

Using the current version 4.2 of the non-permanence risk tool[128] and the evidence in this report, we re-estimate reversal risk for each of the three main risk categories (Table A3 in Supplementary Information A). While the current risk report rates natural risk as 10.75% (rounding up to 11%), one independent modeling study found that 46.6% of North Zamari Wildlife Sanctuary credits would need to be put aside into the buffer insurance pool to cover the project's expected natural disturbance losses over 100 years (2020-2119).[129] This analysis was constructed from historical Landsat data on the probability of a stand-clearing disturbance in each 8x8 km grid cell over the historical record, modeled into the future based on a "moderate severity" disturbance scenario. These findings indicate that the application of an 11% risk rating for natural risk would result in over-crediting of 35.6% (46.6% - 11%). In other words, 35.6% of credits that

121 Verified Carbon Standard. (2024). Non-Permanence Risk Tool (§4, (internal 0.00, external 0.00, natural 10.75, overall 11.00); §3 (fire 2.5, pests 1.25, extreme weather 5.0, geological 2.0); §2.3 (governance 6, REDD+ −2); §2.2 (community engagement −5); §2.1 (tenure 0, with −2 at §2.1.5). Risk tool v4.0, §2.3.4, Supplementary Information A.2)

122 Forest Trends. (2025). *Timber, Sanctions, and Conflict; Frontier Myanmar. (2025). Logged out: Conflict drives deforestation in Bago mountains.* https://www.frontiermyanmar.net/en/logged-out-conflict-drives-deforestation-in-bago-mountains/https://www.forest-trends.org/wp-content/uploads/2025/02/myanmars-forest-sector-since-the-coup_FINAL.pdf; SCS Global Service. (2023). VCS Validation Report (NIR 43); Regulatory Order (FD)4(1)/04(d)(4)/(1765/2016), Myanmar Ministry of Natural Resources and Conservation (2016).

123 SCS Global Services. (2023). Validation Report (NCR 1)

124 Terra Global Capital. (2026). Non-Permanence Risk Report (§2.3.1, §2.3.2); §2.3 contains only these two elements. Risk tool workbook v2-0 was last modified 14 May 2020 (Supplementary Information A.2)

125 SCS Global Services. (2023). Validation Report (§3.4 & NCR 1)

126 Validation Report §3.3.5.1 (Substep 1a, Scenario 2) states that recording that enforcement would require significant financial resources the Forest Department does not have and that this is a key reason for seeking carbon finance, and §3.3.5.2 states that recording that enforcement capacity is hindered by a lack of financial resources; Terra Global Capital. (2026). Non-Permanence Risk Report (§1.3.3)

127 SCS Global Services. (2023). Validation Report (NIR 55 & §3.4.1.6)

128 The January 2026 resubmission falls under version 4.2 of the risk tool, which applies to project requests submitted from 1 January 2024 and sets a minimum rating of 12, above the risk report's 11. See: Verified Carbon Standard. (2024). Non-Permanence Risk Tool (pp. 26-27)

129 Wu, C., Goulden, M. L., Randerson, J. T., Trugman, A. T., Wang, J. A., Yang, L., Acil, N., Cook-Patton, S. C., Cullenward, D., Davis, S. J., Williams C. A., Anderegg, W. R. L. (2026). A global analysis of climate-driven reversal risks in forests. bioRxiv 2026.06.19.733404. https://doi.org/10.64898/2026.06.19.733404

would be issued to the developer should instead be placed into the insurance buffer pool. The estimate of 46.6% alone exceeds the tool's limit of 35 for natural risk, above which a project is ineligible for crediting.[130]

By our recalculation, external risk rises from 0 to 29%. The civil war with two warring factions claiming ownership over the project area should be considered an ownership dispute (10 points as per the non-permanence risk tool); community loss of resource access recorded by the auditors is a dispute over use rights covering the whole sanctuary (10 points);[131] and the 2014 gazettement is a government change to land rights (5 points).[132] Two mitigation credits are inappropriate for this project and should be removed: the community engagement credit (see Supplementary Information A.4) and the discount for participating as a UN-REDD project, which ended in 2020.[133] These changes, combined with the current 6-point World Bank governance score (which we believe has too low a cap) and a 2-point credit for the protected area designation, add to 29%, which is greater than the maximum of 20% allowed for external risk. By our calculation, internal risk rises from 0 to 5%, due mostly to community benefits not being demonstrated. With natural risk at 46.6%, external risk at 29%, and internal risk at 5%, the overall risk rating is 81%, well above the tool's limit of 60%. High natural risk, external risk, and total risk would each render the project ineligible for crediting.[134] If approved, 70% of credits issued to the project developer (81% less the risk report's 11%) would be over-credited.

Finding 3. The project supports military-controlled forestry efforts used to prosecute an ongoing civil war, exposing the Korean government to substantial political risk.

Myanmar's system of Protected Areas has long been used as a mechanism for extending military control, similar to the ways in which other authoritarian regimes have appropriated the conservation agenda to bring land, and the people living on it, more fully under central state authority.[135] Conservation can bring in foreign funding, technical capacity, and putative legitimacy for what often results in the forced exclusion of local communities. Further, where a boundary is drawn over forest that the army has already emptied through counterinsurgency offensives, protected area designation functions as a way to legitimize permanent displacement. The language of forest protection reinforces this by recasting forest dwellers and swidden farmers — commonly suspected of being anti-state insurgents and thereby targets of military offensives — as forest-destroyers and encroachers on what is their ancestral lands.

This project is no exception to this pattern of using conservation to extend military control over people and territory. It

130 Verified Carbon Standard. (2024). Non-Permanence Risk Tool (pp. 17, 19, 26)

131 The record gives no area figure; forest use is prohibited throughout a wildlife sanctuary (see Background), so the dispute covers the whole project area. See: Verified Carbon Standard. (2024). Non-Permanence Risk Tool (Table 6); SCS Global Services. (2023). Validation Report (NIR 55); Terra Global Capital. (2026). Non-Permanence Risk Report (§2.2)

132 The project's own table shows Reserve Forest open to extraction for local use and the sanctuary closed to all extraction, with the sanctuary's new boundaries extending into neighboring Reserve Forest. See: Verified Carbon Standard. (2024). Non-Permanence Risk Tool (Table 6 & p. 12); Forest Law, SLORC Law No. 8/92 (1992), s. 17; Terra Global Capital. (2026). Project Description (Table 14)

133 Non-Permanence Risk Tool v4.2 requires an NDC submitted in the last five years and an active climate plan that includes the project (§2.3.3(2), p. 16). The military regime and the NUG each submitted an NDC in 2021, and UN agencies suspended climate projects after the coup. UNFCCC, Article 6.4 host Party form: Myanmar; Al Jazeera, 1 December 2021; US Department of State, 2024 Investment Climate Statements: Burma.

134 Verified Carbon Standard. (2024). Non-Permanence Risk Tool (pp. 25-26, Appendix 1, p. 27)

135 On conservation as state enclosure, see: Brockington, D. (2002). *Fortress Conservation: The Preservation of the Mkomazi Game Reserve, Tanzania*. James Currey; Fairhead, J., Leach, M., Scoones, I., (2012). "Green Grabbing: A New Appropriation of Nature?" *Journal of Peasant Studies, 39*(2), 237–261. https://doi.org/10.1080/03066150.2012.671770; Specific to Myanmar, see: Woods, K. (2019). "Green Territoriality: Conservation as State Territorialization in a Resource Frontier," *Human Ecology, 47*(2), 217–232. https://doi-org.libproxy.berkeley.edu/10.1007/s10745-019-0063-x

pays for a set of techniques the military applies elsewhere for counterinsurgency. The project's enforcement activities include land-use survey, boundary demarcation, checkpoints, patrols, and agreements specifying which customary activities may continue. They are also, in method and in their effects on the people living there, close to what is done to villages under suspicion of supporting ethnic armed organizations or hosting rebel posts. Boundary demarcation is not the only instrument that carries over: a land-use survey conducted under military authority is also a record of who lives where and who uses which forest; in a war zone where conservation and counterinsurgency blur together, such a record becomes a security risk for local communities.

What the project supplies is thus not the prohibition of local use of the sanctuary — that was already law — but the administrative resources to apply it, as well as the appearance of legitimacy through international cooperation on an issue of global concern. The project's own additionality case is very clear on this. The auditors confirmed that enforcing protection would require significant financial resources the Forest Department does not otherwise have, and they recorded this as a key reason the Forest Department was seeking carbon finance in the first place.[136] The civil war changes the political risk calculus of financing this activity. Fortress conservation is controversial even in peacetime; in the midst of a civil war, the provision of enforcement resources to a Forest Department whose capacity has collapsed and whose authority is widely contested both locally and internationally carries substantial reputational risk for the investor.

Finding 4. The project ignores the largest drivers of deforestation, focusing instead on restricting local villagers' customary use of the forest.

When the project was being designed, the project's own data attributed over 70% of forest loss to commercial operators (see section 3.1).[137] These figures, collected for the project, are supported by independent studies of the Bago Mountains and the sanctuary itself.[138] Yet, no project activity addresses the commercial drivers of dams or plantations, which are often backed by the military regime or its own enterprises. Illegal logging, the second-largest commercial driver, is met only with patrols — and these reportedly stopped at night after the coup because it had become too dangerous.[139]

In contrast, most of the project activities focus instead on smallholders, both by attempting to exclude them from the wildlife sanctuary and trying to compensate for this exclusion through more localized livelihood reconstruction. In addition to serious questions about the latter (see next finding), the Project Document's assertion that the ending of livelihood-focused uses of the sanctuary does not constitute an encroachment on customary rights is not credible. Shifting agriculture and fuelwood gathering — subsistence activities often associated with customary rights — are

136 SCS Global Services. (2024). CCB Validation Report (§3.3.5.1 Sub-step 1a & Scenario 2, §3.3.5.2)

137 Participatory Rural Appraisal. (2016). "Sum of # acres destroyed." In Sheet 3.x.b of Myanmar Participatory Rural Appraisal Combined Results v1-0; Total 7,827 acres: dams 3,000 (38.3%), small-scale agriculture 1,405 (18.0%), illegal logging 1,375 (17.6%), plantations 1,200 (15.3%). Full figures at Table A4. Weighting by carbon density would push the ranking even further toward the commercial drivers.

138 Shimizu, K., Ahmed, O.S., Ponce-Hernandez, R., Ota, T., Win, Z.C., Mizoue, N, Yoshida, S. (2017). Attribution of Disturbance Agents to Forest Change Using a Landsat Time Series in Tropical Seasonal Forests in the Bago Mountains, Myanmar. *Forests, 8*(6). https://doi.org/10.3390/f8060218 [covering the Bago Mountains as a whole]; Hein, Z. M., Williams, A.C., Soe, P., Cox, N., Htin, N.Z., Oo, T.N., Aye, Y.Y., Htun, Y.L., Yoganand, K. (2020). Status of two species of threatened wild cattle (Bos gaurus and Bos javanicus birmanicus) in North Zamari Wildlife Sanctuary, Bago Region, Myanmar, Asian Wild Cattle Specialist Group Bulletin, 5, 18–26. https://www.asianwildcattle.org/uploads/1/2/1/8/121825577/status_of_gaur_and_banteng_in_north_zamari_wildlife_sanctuary.pdf; Myint, M. N., Ngoprasert, D., Sukumal, N., Shwe, N. M., Soe, P., Hein, Z.M., Savini, T. (2024). Predator-prey co-occurrence: defining a management plan for a newly established protected area in central Myanmar, Raffles Bulletin of Zoology, 72, 135–149. https://lkcnhm.nus.edu.sg/wp-content/uploads/sites/11/2024/09/RBZ-2024-0012.pdf [recording illegal logging at 19 of 57 camera locations in 2020]

139 Participatory Rural Appraisal. (2016). (agents table); SCS Global Services. (2023). Validation Report (NIR 43)

two of the activities by local communities targeted for elimination from the sanctuary; ending these is central to the project's stated conservation goals and underlies the livelihood reconstruction efforts in the project-zone villages outside the sanctuary. Yet, the project proponent also insists that villagers meet their basic needs within 5 miles of home, and that this is the full extent of their customary rights. The significance of this distance is that the sanctuary lies 7 miles beyond the nearest village, and the project developer maintains that the sanctuary gazetting notification in 2014 resulted in "no interested parties that claimed any customary use rights" and, similarly, that the project "will not result in property encroachment" (including on existing customary rights).[140] Both of these cannot be true. It thus seems likely that the project is encroaching on customary rights even if no rightsholders came forward at the time of gazetting, since (as explained in Finding 3) to do so could have exposed land users to unwanted attention.

Finding 5. The uncertain status of community forestry implementation is serious cause for concern.

As in the Cambodia case, community forestry figures importantly in project efforts to compensate for the livelihood impacts created by lost access to the sanctuary. A number of the project's activities, including cookstoves, solar, nursery, woodlot, and income-generation activities, all depend on community forests being in place; some or all of its agroforestry efforts may depend on them as well. Because of this, the relative timing of forest exclusion and successful livelihood compensation efforts is crucial.

Yet it is clear, even from the limited available evidence, that the implementation of the community forestry program has been delayed. This raises significant concern, since even a short delay can have major impacts on food security due to the interlocking of exclusion (Finding 4) and livelihood reconstruction. Due to current conditions on the ground (Finding 1), the evidence available to us about project implementation, both in general and on community forestry in particular, was thin.[141] A few glimpses of project implementation nonetheless appear in the published documents: brief discussions of project implementation in the validation documents and a short, updated section of the 2026 Project Description titled "Myanmar Current Situation and Political Risk."

As noted in the VCS verification documents, project activities have been restricting local use of the sanctuary area since at least 2022 (this appeared in the exchange on customary use discussed in Finding 4 above). The validation also noted a funding gap of about a year, from August 2021 to July 2022, which impacted, among other things, the approval and expansion of community forests, and support to the communities.[142] While the detail is thin, the references to continued implementation, locals' exclusion from the sanctuary, and delays in community forestry implementation are troubling when taken together.

140 Project Description (2026), §2.5.1. This text was added in response to concerns by the verifier about how the project was handling with the question of customary rights; recorded that there was no tenure map; no account of use rights within the sanctuary, the buffer zone, the Reserve Forests or the community forests; no description of the populations holding customary use rights in the project area; and indeed no description of land tenure at all (see NCR 73; VCS-VR, NCR 73, auditor response confirming the update and closing the finding).

141 Project documents in particular were challenging because the ones that are publicly available (the Project Description and the two validation documents) do not generally report project results: by design, they focus on project *plans*. Conversely, the reports that document implementation (quarterly monitoring reports, and possibly a verification report) are either not published (the former) and may not even exist yet (the latter) due to delays in project implementation.

142 SCS Global Services. (2023). VCS Validation Report (NIR 55)

The Project Description section on "Myanmar Current Situation and Political Risk," published more recently in early 2026, does not do anything to allay this concern. It offers a summary of quarterly implementation activities in 2021–2023 in support of the project's claim that it is still "[able] to operate under [present, i.e., post-coup] country conditions."[143] The activities listed include references to community forestry training (in 2021); management planning, community consultation, and a field inspection "for the revitalization of community forest" (in 2022); and "renovation of notice board and extension/motto boards on CF demonstration site" and "consultation meeting with Community Forestry (CF) members for supporting the CF activities" (in 2023).

Notably absent, however, is any mention of the approvals by local government mentioned elsewhere in the document that are needed for state recognition of community forests (e.g., p. 65). While absence of evidence is not evidence of absence, in this case the lack of reference to community forestry formalization, or to any project activities in 2024 and 2025, are notable and concerning. Similarly, the mismatch between the activities summarized for 2021-2023 and the implementation schedule included elsewhere in the Project Description echo the implementation delay for the community forestry program noted by the auditors.[144] Given the interlocking of exclusion and livelihood reconstruction, even minor delays can have major impacts.

Also relevant here is that the end of the logging ban in November 2026, as well as the logging that has taken place over the last decade (Figure 3.4), both overshadow the community forestry implementation schedule. While deforestation in the project zone seems to have decreased since the coup, the locations of forest loss over the last decade correspond with the general areas of the project zone around project villages where community forestry activities are supposed to be taking place. While a more robust investigation is needed, the proximity of recent deforestation to the project villages shown in Figure 3.4, as well as the possible resumption of state-sanctioned logging after November 2026 in and around project villages, are cause for concern.

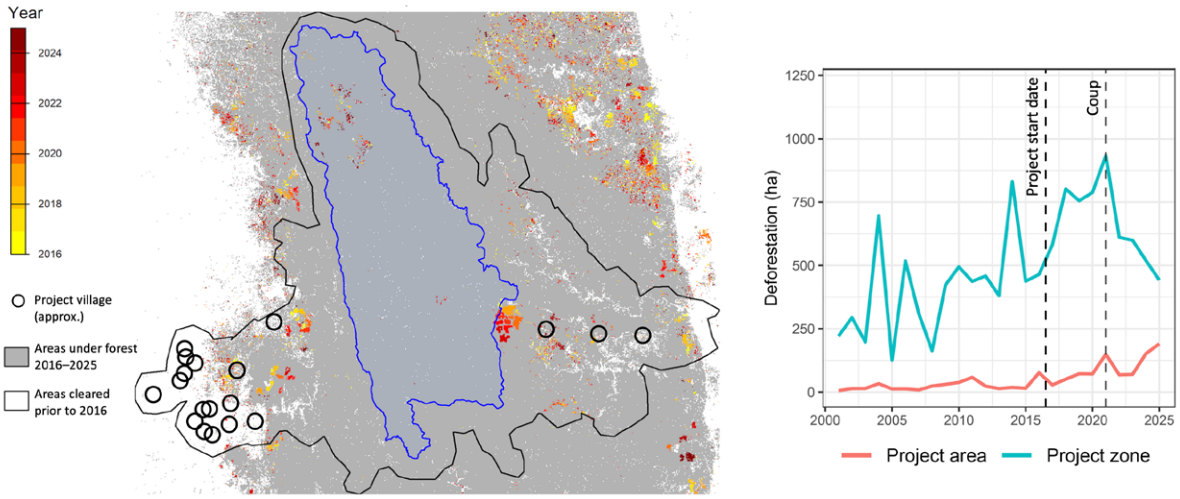

Figure 3.4. Deforestation in and around the North Zamari project zone.
Left: Deforestation by year relative to project villages; Right: Same data shown in time series. Deforestation is based on Global Forest Cover (GFC; see Supplementary Information B for details). Approximate project village locations are derived from Project Description 2026, p. 27 map 5. In the right image, note that the project zone includes the project area.

143 Terra Global Capital. (2026). Project Description (p. 38)

144 Terra Global Capital. (2026). Project Description, Table 8 ("Annual Implementation and Adoption Schedule for the Project Activity Instance by Activities Grouped by Objectives"), p. 34

3.4 Recommendations

The recommendations below proceed from the view that Korean support for carbon crediting in Bago Yoma is not achieving what is intended, and that the same resources would produce better outcomes for forests and for the communities concerned if directed to entities other than the military regime, recognizing the land claims of the people living on it whose authority over that territory is durable across a 30-year crediting period. We suggest two possible complementary directions: support for community-led forest protection and customary tenure in territory controlled by the KNU and inhabited by ethnic Karen, and support for forest governance in NUG-controlled territory.

Neither the NUG nor this report proposes a credited activity in territory the NUG itself administers. NUG's position, given in interview, is that implementation of the North Zamari activity is presently impossible from either side, and its own proposals are for monitoring and livelihood support. NUG's interim framework is consistent with the recommendation here in two respects:[145] in areas controlled by ethnic armed organizations, such as the KNU, NUG holds that the policies of those ethnic governing bodies shall be abided and undertakes collaboration with them; and NUG permits cultivation of seasonal crops, including swidden by ethnic groups and local communities — a practice that the North Zamari REDD+ project prohibits.

Support community-led forest protection and customary tenure in KNU-administered territory.

We recommend that KFS support community-led forest protection and customary forest tenure in territory administered by the KNU, a long-standing non-state ethnic governing body in the Karen inhabited hilly forests of southeast Myanmar. These hills, where some of the country's most expansive forests remain, have been under KNU authority since the 1950s and have never been administered by the central state.

The KNU's Kawthoolei Forestry Department administers forestlands under its own Land and Forest policies and has held cooperation agreements with international conservation organizations since its ceasefire agreement in 2012. World Wildlife Fund (WWF) Myanmar signed an agreement with the KNU in November 2016 to give technical and financial support for forest and wildlife protection in KNU territory, in districts that include Nyaung Lay Pin, on the eastern side of the Bago range. Since the coup, international organizations have continued to support Karen-led conservation through the KNU rather than through Nay Pyi Taw; when UN-REDD could not engage the military regime, it began preliminary work on a REDD+ action plan with the KNU and another armed political opposition group, the New Mon State Party.[146]

The KNU's Kawthoolei Land Policy recognizes customary *kaw* tenure — ancestral territory rooted in customary governance practices — and provides registration procedures, alongside categories of community forest, Forest Reserve, and Wildlife Sanctuary under KNU authority. The Kawthoolei Agriculture Department has issued individual household land-use certificates with geospatial support since 2017. In September 2026, the KNU's Kawthoolei Central Land Committee approved customary land certificates for 33 Karen *kaw* territories covering 380,984 acres, which is the kind of tenure recognition the Bago Region REDD+ Program never provided.[147] The internationally awarded Salween

145 NUG-MONREC. (2022). Interim Resources Management Framework (ch. 2 §5, ch. 3 §6(a), (b), (f) and §7(f), ch. 4 §8–9, ch. 6 §11(c)). https://monrec.nugmyanmar.org/interim-resources-management-framework-forestry-and-biodiversity-sector/

146 Siang, N.A. (2016). "KNU Signs Forestry Memorandum with WWF." The Irrawaddy. https://www.irrawaddy.com/news/burma/knu-signs-forestry-memorandum-with-wwf.html; UN-REDD Program. (2021). National Programme Annual Report: Myanmar. https://www.un-redd.org/sites/default/files/2021-09/UNREDD%20Myanmar%20AR%202018%20Final%20with%20Gov%20and%20Non-gov%20comments.pdf; On continuing support since the coup, including WWF Denmark, WWF Sweden, and the Tenure Facility, information from personal communications, 14–23 September 2026, Copenhagen and Stockholm.

147 Kawthoolei Land Policy, chs. 1 and 3 (2015); KNU Forest Policy (2018); Hyolmo, S.L. (2024). "Not waiting for the government, Myanmar's Karen people register their own lands." Mongabay. https://news.mongabay.com/2024/02/not-waiting-for-the-government-myanmars-karen-people-register-their-

Peace Park, ratified in December 2018, spans some 5,500 square kilometers of *kaw* territories, community forests, and KNU wildlife sanctuaries, and is governed by a General Assembly of the KNU administration, Karen civil society, and Karen villages. The Thawthi Taw-Oo Indigenous Park, declared in December 2024, operates similarly.[148]

The most direct route is for the KFS to support the Kawthoolei Climate Action Plan. The Karen forest conservation and climate plan under the Kawthoolei Environmental Protection Committee has presented internationally as the world's first Indigenous-led sub-national nationally determined contribution, on terms set by the KNU and the Karen communities concerned.[149] Support can begin as grants or results-based payments for forest protection and for the registration of customary tenure by an authority that recognizes it and governs with the consent of the people living in the territory it administers. Crediting can follow if the KNU and those communities choose it. This recommendation is not specific to any one landscape; it applies to territory the KNU administers, and within that territory, any activity is for the KNU and the communities to decide.[150]

Support forest governance without crediting.

In forests where no established non-state ethnic administration exists, another appropriate form of Korean support may be to improve forest governance in NUG-controlled territory. Capacity-building with the NUG's MONREC is feasible and demonstrated.

Between June 2024 and April 2025, a forest monitoring program supported by Global Forest Watch and implemented by Forest Trends provided remote-sensing deforestation monitoring capacity building, with field verification, to NUG's MONREC. The project supported monitoring of more than a million hectares of protected forest across five townships in Sagaing and Magway under remotely sensed deforestation hotspot monitoring and trained NUG forest officers.[151]

The NUG's ministry has proposed extending monitoring to Sagaing, Magway, and Tanintharyi, and developing fuel-pellet production from sawdust, charcoal, and agricultural residues. That work ended because its funding period closed, not because the arrangement failed; the system, the trained officers, and the Burmese-language technical training materials remain. The project required continual security assessments for field verification, working through NUG's local forest staff and administration teams. A credited activity must guarantee an area against reversal for 30 years and is defeated by contested control, but a deforestation hotspot monitoring and capacity-building program can be routed around conflict, paused where access closes, and resumed when secure.[152]

own-lands/; Karen Environmental and Social Action Network. (2026). "Big News: KNU Officially Recognizes 33 Indigenous Karen Territories in Kawthoolei." https://kesan.asia/big-news-knu-officially-recognizes-33-indigenous-karen-territories-in-kawthoolei/

148 The Salween Peace park Steering Committee and Karen National Union. (2018). Charter of the Salween Peace Park. https://kesan.asia/publication/salween-peace-park-charter/; Paul, A., & Karen Environmental and Social Action Network. (2022). "Salween Peace Park: Indigenous Conservation Governance in Southeast Asia." IPCA Knowledge Basket. https://ipcaknowledgebasket.ca/about/stories/salween-peace-park/; Karen Environmental and Social Action Network. (2024). "The Thawthi Taw-Oo Indigenous Park: the Birth of the Second Indigenous Karen Conserved Territory." https://kesan.asia/the-thawthi-taw-oo-indigenous-park-the-birth-of-the-second-indigenous-karen-conserved-territory/

149 Kawthoolei Environmental Protection Committee. (2022 & 2025). *Kawthoolei Nationally Determined Contribution: Indigenous Karen Forest Conservation and Climate Action Plan in Burma/Myanma*[r]. Indigenous Peoples Pavilion at COP27and COP30, Sharm El-Sheikh & Belém;The KNU cannot submit a formal nationally determined contribution, which is open to UN member states only, so the plan functions in that role.

150 If crediting follows later, it does not require approval from Nay Pyi Taw. The VCS requires the proponent to hold the right to control and operate the activity and to the resulting credits, and requires compliance with applicable law. Government authorization becomes necessary only where national law imposes it, or where credits carry an Article 6 or CORSIA label requiring host-country attestation and corresponding adjustment.

151 Woods, K. & Chan, N. (2026). "Behind the Pixels: Monitoring Deforestation in Post-Coup Myanmar." Global Forest Watch. https://globalnaturewatch.org/blog/users-in-action/monitoring-deforestation-post-coup-myanmar/

152 Interview with NUG-MONREC official, 1 August 2026. On file with authors.

4. Lao PDR: Dong Hua Sao National Park

Summary of findings and recommendations

Findings

1. **Driver misdiagnosis:** The draft Project Description blames villager poverty and weak governance, and targets project activities on changing villager forest use; our analysis points instead to infrastructure access, cassava-driven commercial clearing, and displacement from plantation concessions as principal, underlying drivers.

2. **Unmanaged concession risk:** Hydropower, mineral exploration, and a potentially overlapping carbon claims all pose direct and indirect deforestation risk in and around Dong Hua Sao, and the draft Project design does not address any of these.

3. **Tenure treated as optional:** The draft Project Description's claim that communities hold no legal land rights is now outdated under revised legislation; rights recognition should be a precondition of the project, not an afterthought.

4. **Under-financing:** At ~US$5/ton, the project cannot fund the tenure work, livelihoods, management capacity and monitoring it needs — monitoring, reporting, and verification costs alone exceed that price.

Recommendations

Recommendations for Dong Hua Sao

1. **Rebuild the driver and agent analysis to focus project activities on structural, rather than immediate drivers** using spatial evidence, disaggregating actors by capital and origin — resident smallholder, local business, non-local business, concession-holder — with a distinct intervention pathway for each, aimed at structural rather than immediate drivers.

2. **Compile and publish a concession and investment register** for Dong Hua Sao and its zone of influence, covering hydropower, roads, mining, agricultural/forestry concessions and forest-carbon claims, with instrument type, area, status, and expiry. Update it at each monitoring event as a tracked project parameter.

3. **Secure agreement to not allow new concessions in the project area or leakage belt** during the crediting period from central and provincial authorities, with consequences for crediting and benefit sharing spelled out in advance.

4. **Resolve the overlapping carbon claim before validation.** Obtain a written determination from the Department of Forestry on the scope and legal status of any other forest-carbon instrument potentially overlapping with the crediting area or leakage belt and disclose it in the Project Description.

5. **Make tenure formalization a precondition to validation, not a parallel activity.** Complete titling and land-use certification for all eligible households before seeking validation, and base the ownership and carbon rights

claim on that rights structure together with MAF Decision 4565 and the Carbon Credit Decree.

6. **Convert enforcement into agreement.** Replace gate control and expanded patrols with negotiated forest management contracts and guardian-village arrangements, making resident rights-holders paid parties with defined obligations rather than subjects of policing.

Recommendations for Korea's upscaling to the jurisdictional program in Phongsaly

1. **Build the driver and agent analysis at jurisdictional scale,** focusing on the structural drivers of land scarcity, insecurity, and consequent deforestation, disaggregated by district, actor type, and conversion type.

2. **Treat rotational, fallow-based cultivation as its own land-use system,** not a default deforestation driver — determine, rather than assume, where and when swidden conversion becomes permanent.

3. **Compile a concession and cross-border investment register first,** covering timber, rubber, and contract-farmed crops moving into China, with **a written no-new-concessions commitment** and a contingency/redress plan for when that commitment is breached.

4. **Make tenure formalization a precondition,** sequenced district by district rather than assumed uniformly ready across thirteen ethnic groups and a resettlement history — nested crediting should follow tenure and concession work, not precede it.

5. **Address the proponent's conflict of interest as structural, not incidental.** at this scale: build in independent verification, public concession disclosure, and community interviews conducted without the concession-granting or enforcement agency present.

6. **Design nested, multi-level benefit sharing before validation.** Allocation, decision-making, and auditing should be specified at national, provincial, district, and village levels, not a single project-level mechanism.

7. **Fund the preconditions as program finance and expect higher costs to match the real costs of doing it properly.**

4.1 Introduction

The Korea–Laos REDD+ Joint Project proposes a 30-year avoided-deforestation project over 93,935 hectares of the Dong Hua Sao (DHS) National Park in Champasak Province, southern Lao PDR (Figure 4.1). An undated draft Project Description Document (PDD) applies Verra's VM0048 methodology and its module for estimating emission reductions from avoided unplanned deforestation, VMD0055.[153] The project seeks joint VCS and CCB certification and estimates that the project's average annual emission reductions will be 49,706 tCO_2e, or roughly 1.49 million tCO_2e over 30 years (nominally 1 January 2023 to 1 January 2053).[154] The proponents are the Lao PDR Department of Forestry (DoF) and the Korea Forest Service. Preparatory actions in Dong Hua Sao supported by the Korea Forest Service began under the Korea–Laos REDD+ Joint Project in 2018, with an allocated budget of approximately US$1,169,000. By 2021, around US$915,700 of this budget had been allocated for activities, including land-use planning in selected villages, participatory park management planning, sustainable forest management, and community capacity-building.[155] The Project Description was designed to build a sustained program of forest conservation and carbon crediting that will run until 2053,[156] during which time Korea is preparing to expand its REDD+ portfolio in Laos to include a jurisdictional program in Phongsaly province. The Project Description is currently being revised and, at present, key information regarding the baseline, additionality, project boundary, safeguards, risk assessment, and monitoring are pending revision and validation.

The draft Project Description states that all forest land is owned by the Lao state and that communities living in and around the park hold no legal land rights in the project area, while committing to recognize customary use through participatory processes.[157] The draft Project Description identifies the inhabitants of villages within and adjacent to the park as the primary agents of forest loss, stemming from their clearing forest mainly for agriculture (principally coffee and cassava, alongside cashew, rice, and rubber) with additional pressure from firewood collection, timber cutting, and non-timber forest product extraction. It attributes these to underlying conditions of poverty and weak governance (limited law enforcement), amplified by rising commodity prices, population growth, and improved access following dam-related road construction. It also reports "outsiders" illegally entering the park to log and establish plantations. The Project Description's own figures record roughly 5,263 ha of forest lost inside the park between 2005 and 2019 (about 0.39%/year), with the annual rate *declining* across the period (from 0.85% in 2005–2010 to 0.18% in 2015–2019) and the fastest loss recorded in the leakage buffer rather than inside the park.

The project's deforestation and emissions reduction estimates are explicitly preliminary: VM0048 draws baseline deforestation rates from a jurisdiction-wide allocated risk map that Verra publishes for each host country. Each map classifies forest land into risk classes based on predictors such as historical deforestation rate and distance to forest edge, and then divides the jurisdiction-wide deforestation budget down to individual projects according to where

153 Verified Carbon Standard. (2024). *VMD0055 Estimation of Emission Reductions From Avoiding Unplanned Deforestation, v1.1.* https://verra.org/methodologies/vmd0055-estimation-of-emission-reductions-from-avoiding-unplanned-deforestation-v1-1/

154 Korea–Laos REDD+ Joint Project, Project Management Unit (n.d.) *Dong Hua Sao National Protected Area Project: VCS Project Description, version 1 (under revision).* Prepared by unique land use GmbH. Unpublished draft. Verra (2023a) VM0048 Reducing emissions from deforestation and forest degradation, v1.0. Washington, DC: Verra. Verra (2023b) VMD0055 Estimation of emission reductions from avoiding unplanned deforestation, v1.0. Washington, DC: Verra.

155 According to budgetary data reported by the Korea Forest Service to the Korean National Assembly, shared with the authors on 6 October 2026.

156 Assuming a 2023 start date, as indicated in the draft Project Description (thus a 30-year crediting period).

157 Project Management Unit of the Korea-Laos REDD+ Joint Project. (n.d.). Project Description (p. 10)

they fall on that map. No such map has yet been released for Lao PDR.[158] In its absence, the proponents constructed an interim empirical forest-risk-class approach by applying the same general logic (historical loss patterns and edge proximity) to project-level data to arrive at a working estimate. The Project Description commits to re-running the calculation once the approved risk map for Laos becomes available and, under VM0048's rules, to reassessing the baseline every six years thereafter.

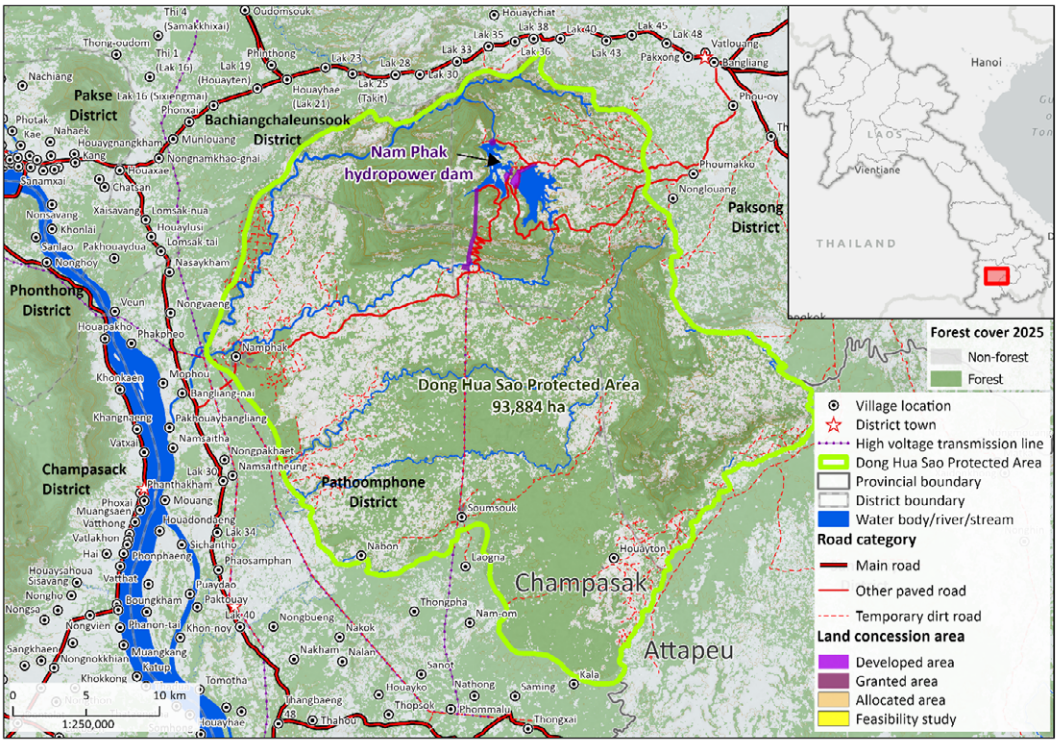

Figure 4.1. Dong Hua Sao Project Area.

The project's stated theory of change is that raising community knowledge, capacity, livelihood stability, and wellbeing will relieve the pressures driving unplanned deforestation, thereby conserving the park's carbon stocks and biodiversity. The draft Project Description does not yet fix its activities; these are to be finalized through the ongoing participatory/CCB consultation. It nonetheless sets out a candidate menu aimed at the identified drivers and clustered into groups of intervention areas:

- **Livelihood substitution away from forest-clearing agriculture:** Agroforestry with alternative commodities (coffee, cocoa), sustainable timber production near villages, reforestation, non-timber forest product management, handicrafts, ecotourism, business funding and no-interest loans, community-based financial organizations, and infrastructure development including roads.
- **Participatory planning and capacity:** Participatory land-use planning with villages inside the park, support to establish village land-use plans, awareness raising, training, and the promotion of villagers as park "guardians."

158 Verra. (2025). "Verra releases provisional versions of allocated deforestation risk maps for use with new REDD methodology." https://verra.org/verra-releases-provisional-versions-of-allocated-deforestation-risk-maps-for-use-with-new-redd-methodology/

- **Enforcement:** Entrance control at the park gate "to avoid encroachment of actors from outside the national park" and extension of Dong Hua Sao office staff and forest patrols "for enhanced law enforcement and governance."

As the proposed Dong Hua Sao project is in its early stages of design, no benefit-sharing mechanism is yet defined, and neither is a free, prior, and informed consent process documented. The sections on "no net harm," local stakeholder consultation, environmental impact, public comments, and specific safeguards are each marked "not applicable at this stage."[159]

This chapter provides an external assessment of the proposed Dong Hua Sao REDD+ project. Our goal is to highlight key issues, opportunities for constructive engagement, and, in so doing, help pave the way for a high-quality and credible REDD+ project and larger jurisdictional program that are at once effective in achieving pro-climate forest carbon outcomes, socially beneficial, and equitable.

Our analysis draws on remotely sensed imagery for land use and land cover for the periods 2015-2020 and 2020-2025, national land concession data, policy documents, field reports and assessments from 2005 to 2026, and interviews with key local experts and stakeholders in 2026. For the spatial analysis of land cover change, raster tree cover change data were filtered to isolate forest loss (deforestation) from 2015 to 2025. A 10-year time window was selected for this study, as a decade of forest cover dynamics is sufficient to characterize long-term deforestation trends. Conversely, shorter intervals (e.g., 1–2 years) may reflect temporal noises rather than trends. The deforestation time series was divided into two five-year periods: 2015–2020 and 2021–2025, which represent historical and recent dynamics, respectively. The key outputs from the deforestation hotspot analysis, including both historical and recent hotspot layers, were used to identify the deforestation fronts. To determine the two categorical values for the spatial patterns (as defined in the table above), we used the hotspot layers to visually establish the most meaningful, scale-specific thresholds for Dong Hua Sao. These threshold values were then applied to classify the deforestation hotspots across both time windows into two categories: highly clustered/dense and scattered/small/isolated tree cover loss. This classification was executed using the Raster Calculator tool in ArcGIS Pro.

4.2 Historical, Political, and Institutional Context

Dong Hua Sao was a 26,000-ha royal hunting reserve gazetted under the French colonial administration in 1950. It was expanded to 110,000 ha and declared a National Reserved Forest in 1993 and, subsequently, upgraded to a National Park in 2021. Within that officially registered area, the draft Project Description calculates the forested portion eligible to generate credits at 93,935 ha.[160] The park spans mixed deciduous and dry dipterocarp forest types, waterfalls, wetland and highland areas, and includes part of the Bolaven Plateau and part of the Ramsar-designated Beung Kiat Ngong wetlands. Under the 2019 Forestry Law, Dong Hua Sao is a National Park, zoned into Total Protected, Controlled Use, and Buffer zones.

The landscape that became Dong Hua Sao National Park is an ethnically diverse and variably populated mix of lowland and upland forests and agricultural areas that reflects the area's history in multiple ways. The tension between

159 Project Management Unit of the Korea-Laos REDD+ Joint Project. (n.d.) Project Description (p. 27)

160 Project Management Unit of the Korea-Laos REDD+ Joint Project. (n.d.). Project Description (p. 15)

commercial activity and conservation spans the pre-colonial, colonial, Cold War, and contemporary eras, and underlies our insistence on considering the wider landscape beyond the boundaries of the protected area when assessing and addressing the drivers of forest loss.

During the Second Indochina War (roughly 1965-75), this and surrounding areas became a recipient landscape for large numbers of internally displaced people fleeing the bombing to the east along the Ho Chi Minh Trail. Wartime subsistence efforts gave way to increasing commercialization after the Lao PDR's establishment in 1975. Lowland areas were targeted for commercial logging, while smallholder coffee focused on the slopes and highlands of the Bolaven Plateau. Both industries relied on the labor of the earlier internally-displaced persons and, increasingly, additional people moved into the area through state-sponsored resettlement programs. In 1993, this commercial pressure prompted the area's declaration as by a National Reserved Forest at 110,000 hectares; this fourfold expansion encompassed not only the historic reserve area but also the increasingly settled "working landscapes" around it.

Conservation-oriented landscape management efforts began in 1995 under a Dutch-funded project and set the stage for an ongoing struggle between commercial agriculture and conservation that persists to this day. The activity list from that period includes: (1) Participatory rural appraisal in all user villages; (2) Registration of ownership claims inside the protected area; (3) Wildlife and habitat survey, and key-species and impact monitoring; (4) Drafting of protected area rules with village input; (5) Conservation education in local schools; (6) Small-scale village development assistance; and (7) Support to village-operated nature tourism.

Two features from that period deserve particular attention. First, an attempt in 1993–94 to survey the enclave coffee plots and compensate their owners instigated local social conflict and was ultimately abandoned, pointing to challenges in addressing agricultural land uses that overlapped the Protected Area, a challenge that persists until today. Second, by 1999 the project had registered land claims inside the protected area, produced a formal analysis of them, and proposed excisions totaling 278 km^2. Over half of the excisions,156 km^2, were on the fringes of the Bolaven Plateau on the grounds that original dense forest cover had already been reduced to a mosaic of around 50% or less. The management team's own note, cognizant of both the need for agricultural land and the likelihood that this land would come from the protected area, was that continued encroachment might require further excisions. This land pressure and the likely conversions that would stem from it were thus already observed by projects long before subsequent land concessions would accelerate and intensify the struggle for land.

Non-local market opportunities and investment interests play a crucial role in shaping forest outcomes in Dong Hua Sao. *Coffee* on the plateau is the highest-value option and the one most compatible with tree cover, but it is capital- and labor-intensive, slow to establish, and vulnerable to both weather and price. Lao growers were hit hard by extreme weather in 2024.[161] Coffee is also the crop around which land competition on the Bolaven had historically been strongest.

Cassava is the opposite: low capital, quick returns, frequently financed by the buyer, and expanding wherever land can be opened, particularly in areas where tenure claims and ownership is least clear. Its price is volatile, and — critically for project design — that volatility is transmitted to farmers through local market structures as much as through world prices. Nguyen, van Huellen, and Newby[162] show that the price a Lao cassava farmer receives is shaped by the structure

161 Mekong Eye. (2024). "Extreme weather hits coffee growers' crops in Laos." https://www.mekongeye.com/2024/08/05/weather-coffee-la

162 Nguyen, A.-T., van Huellen, S., Newby, J. (2023) "Price volatility across scales and farmer maneuvering in Lao cassava markets." *Journal of Land Use*

of local trading and credit relations, not simply by global demand. A project offering "alternative income sources" is therefore competing not with a commodity price but with a bundle of price, credit, and market access over which it has little control. While local households are certainly key actors in the expansion of cassava within the project area, they are by no means the only, a point we return to below.

Forest products — timber for construction, fuelwood, and non-timber forest products for consumption and sale — remain a livelihood buffer for households. Extraction within the project area is likely to run against intervention measures, particularly for timber.

These livelihood strategies have long intersected problematically with conservation priorities in the Park and the need for land. Lao land policy over the past two decades has been organized around the conversion of land into investable assets — so-called "turning land into capital" — and the resulting concession landscape has been documented in detail.[163] Southern Laos where the park is situated has been among the most heavily affected regions, and the regional pattern — agricultural expansions and intensification, concession allocation, and the shrinking of the smallholder land frontier — is well established across the Mekong.[164] Research on rubber concessions in southern Laos documents dispossession that is not a transitional cost but a durable transformation of what households can do with their labor and land.[165]

The carbon consequences of this are clear and measurable. Bauernschuster et al.[166] find that land acquisitions for agriculture, forestry, and mining in Laos generated net emissions averaging 4.9 million tCO_2e per year over 2001–2017 — about a third of all emissions from land conversion nationally — at an emissions intensity roughly five times that of other conversions because these predominantly converted forest and fallow rather than the degraded land that official justifications assumed. Mining alone accounted for 91% of concession-related emissions. Of the roughly 351,000 hectares of tree cover Laos lost in 2024, some 64% — around 223,000 hectares — occurred inside protected areas.[167] Protected status is thus not a reliable predictor of actual protection.

Science, 18(1), pp. 374–394. https://doi.org/10.1080/1747423X.2023.2264874

163 Hett, C., Nanhthavong, V., Saphangthong, T., Rodriguez, D., Phouangphet, K., Speller, W., Epprecht, M., Lu, J., Shattuck, A., Ingalls, M., Bernhard, R., Phathitmixay, S., Phomphakdy, C., Heinimann, A. Messerli, P. (2020). *Land leases and concessions in the Lao PDR: a characterization of investments in land and their impacts.* Centre for Development and Environment, University of Bern. https://landportal.org/library/resources/land-leases-and-concessions-lao-pdr-characterization-investments-land-and-their; Kenney-Lazar, M. (2023). "Turning land into capital? The expansion and extraction of value in Laos." Environment and Planning A: Economy and Space, 55(2). https://doi.org/10.1177/0308518X211063493

164 Ingalls, M.L., Diepart, J.-C., Truong, N., Hayward, D., Neil, T., Phomphakdy, C., Bernhard, R., Fogarizzu, S., Epprecht, M., Nanhthavong, V., Vo, D.H., Nguyen, D., Nguyen, P.A., Saphangthong, T., Inthavong, C., Hett, C. Tagliarino, N. (2018). State of Land in the Mekong Region Photo Story. Centre for Development and Environment, University of Bern, and Mekong Region Land Governance. https://landportal.org/library/resources/state-land-photo-story

165 Kenney-Lazar, M. (2012). "Plantation rubber, land grabbing and social-property transformation in southern Laos." The Journal of Peasant Studies, 39(3–4), pp. 1017–1037. https://doi.org/10.1080/03066150.2012.674942; Kenney-Lazar, M. (2025) *Socializing land: plantations, dispossession, and resistance in Laos.* University of Hawai'i Press.

166 Bauernschuster, S., Pichler, M., Nanhthavong, V., Bernhard, R., Epprecht, M., Gingrich, S. (2022). "Carbon emissions from land acquisitions in Laos." *Ecology and Society, 27*(3), art. 45. https://www.ecologyandsociety.org/vol27/iss3/art45/

167 Flynn, G. (2025). "Protected areas hit hard as Mekong countries' forest cover shrank in 2024." Mongabay. https://news.mongabay.com/2025/10/protected-areas-hit-hard-as-mekong-countries-forest-cover-shrank-in-2024/

4.3 Findings

Finding 1. The project addresses the wrong drivers: Encroachment is a direct result of structural drivers of land scarcity.

Increasingly, local land claims and foreign and domestic commercial investments — in coffee, rubber, bauxite, and hydropower — have come into conflict in Dong Hua Sao and the areas adjacent to it. The academic literature describes the displacement of traditional land users within an environment of unclear or weakly-enforced property rights.[168] Between 2004 and 2006, three large concessions — around 10,000 ha each — were granted to rubber companies operating along the northwestern and western boundaries of Dong Hua Sao, including the Dak Lak Rubber Company and the Vietnam-Laos Rubber Company.

The concession of land outside the Dong Hua Sao heightens smallholders' need for land within it. For households who lost land near the park's western flank, the nearest unallocated land with usable soils is inside the park boundary. The displacement of farming into the park is clearly discernible along deforestation fronts from 2015–2020, and accelerates in the central-western portions of the protected area from 2021–2025 (Figure 4.2) as access roads were developed to service the Nam Phak Hydropower Dam (see below). A meaningful share of deforestation inside Dong Hua Sao is thus the downstream result of land allocation outside it.

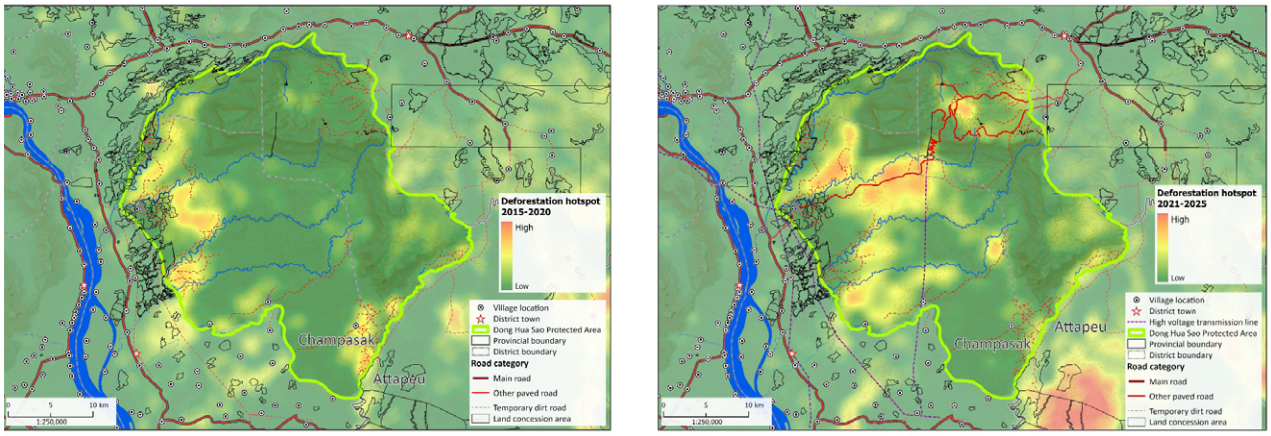

Figure 4.2. Deforestation Fronts: 2015–2020 and 2020–2025.

Areas affected by this clearance are non-trivial. Active deforestation fronts (those largely emergent during the period 2015–2020 and subsequently solidified) account for around 11,413 ha, while land being newly cleared in the last five years (the Emerging Deforestation Front) is nearly 75% greater, at around 19,959 ha (Figure 4.3). Diffuse, scattered tree clearance is greater than each and spread around the margins of cleared land.

168 Delang, C.O., Toro, M., Charlet-Phommachanh, M. (2013). "Coffee, mines and dams: conflicts over land in the Bolaven Plateau, southern Lao PDR." *The Geographical Journal, 179*(2). https://doi.org/10.1111/j.1475-4959.2012.00481.x

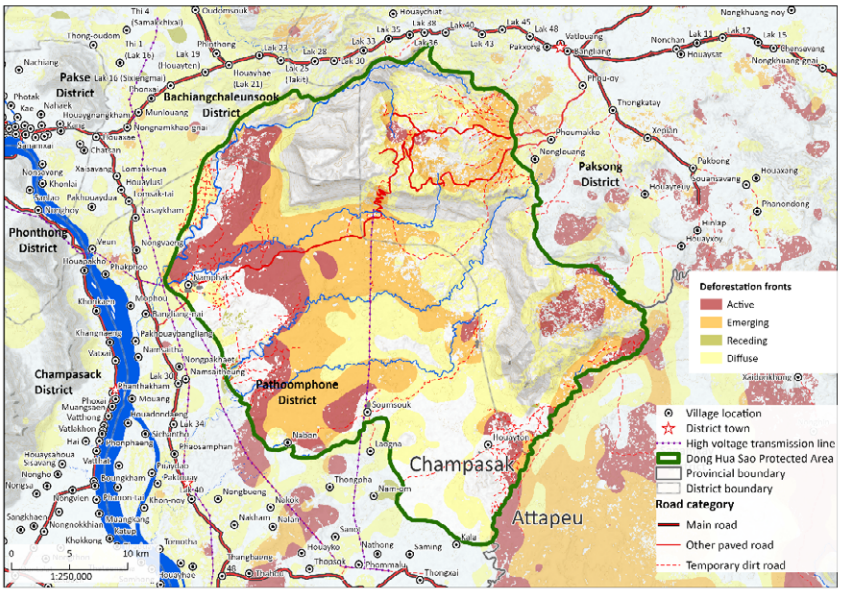

Figure 4.3. Composite Deforestation Fronts 2015–2025.

Over the past 10 years forest clearance has been largely driven by the rapid expansion of cassava and other commodity crops in the western and southeastern parts of the protected area, undertaken both by local farmers and by local and non-local business actors responding to high cassava prices. This is consistent with what has been visible publicly since at least 2022, when reporting on encroachment at Dong Hua Sao described heavy equipment clearing land and stacked timber inside the protected area (Figure 4.4).[169] Heavy machinery and commercial timber extraction are not the signature of subsistence poverty. They are the signature of capitalized actors operating where enforcement is weak and land is cheap because it is nominally state-owned.



Figure 4.4. Forest Clearance in Somsouk (left) and Nabone (right) Villages for Cassava.

169 Laotian Times. (2022). "Cassava farmers encroach upon Dong Hua Sao National Park." https://laotiantimes.com/2022/05/04/cassava-farmers-invate-dong-hua-sao-national-park/

The actors engaged in this pattern of clearance matters especially for the design of the project. If clearance is being carried out in part by business actors, including non-local ones, even where local communities are involved, then income-substitution activities aimed at village households will not reach the actors responsible, while enforcement aimed at village households will fall on people who are not primarily responsible, or who act principally as subsidiaries.

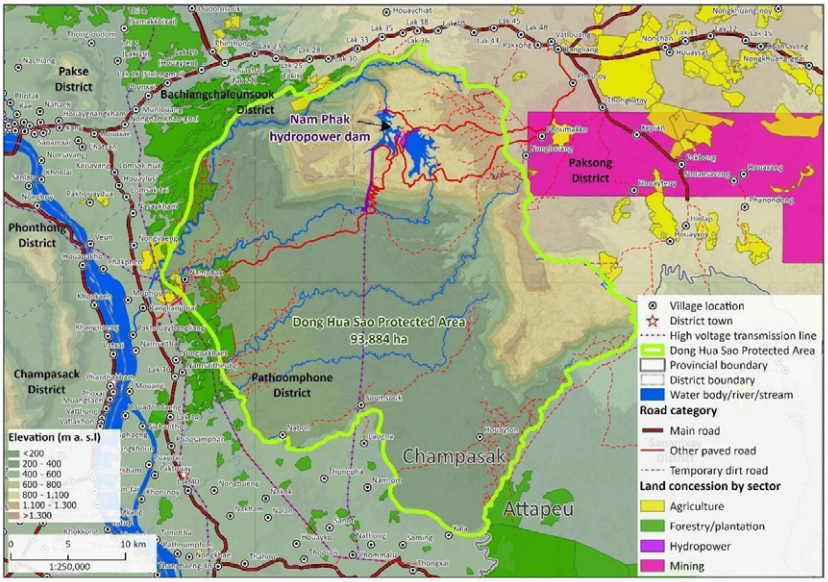

Figure 4.5. Land Concessions by Sector.

Our analysis further associates clearance on the western side of Dong Hua Sao with land pressure from Vietnamese rubber plantations outside the protected area (Figure 4.5) displacing smallholder land uses into the Park. Thus, some of the deforestation the project proposes to prevent is an effect of state land allocation decisions. Preventing it by restricting the displaced households, without addressing the allocation, transfers the cost of a policy decision onto the people least able to afford it. The risks of further displacement from concessions are not only a past issue, but also a future risk, given the recent allocation of agroforestry concessions in the southeast and mineral exploration concessions in the northeast, a point we return to below.

Driver and agent misidentification produces intervention mismatch. The project's planned livelihood component is aimed at households that are not the principal proponents of the largest recent losses, even if they are implicated in change process; its enforcement component is aimed at a boundary that infrastructure has already opened; and neither component engages the actors with capital.

An enforcement-led project in a landscape where forest loss is driven substantially by state or other capitalized actors will fall hardest on the least capitalized, posing reputational risk for the Korean government and a direct social-integrity risk under CCB.

Finding 2. Land concessions constitute the single greatest risk of project failure, but are not addressed by the project.

Interestingly, the words "concession" or "land lease" do not appear in the draft Project Description. Despite this, our analysis suggests that these play an outsized role in deforestation outcomes, both directly and indirectly.

Hydropower

The Nam Phak hydropower project sits on the Bolaven Plateau roughly 20 kilometers from Paksong, well inside Dong Hua Sao. It is comprised of two reservoirs and two power stations with a combined capacity reported at 160–168 MW, water dropping some 700 meters through a headrace tunnel and penstock to the lower station. Construction began in 2021 and was substantially complete by 2026, during which time inundation reached its zenith. The project is held by Chaleun Sekong Energy (70%), Électricité du Laos (15%), and Kobe Green Power (15%), and the majority of its output is sold to Cambodia.[170]

The Nam Phak complex is described above. Beyond its direct and induced deforestation effects, it introduces a second-order issue for a carbon project. Watershed forest above a hydropower reservoir is forest that the operator has an independent commercial interest in maintaining, because sedimentation and hydrological variability are direct costs to generation. Where such forest is subsequently credited as avoided deforestation, an additionality question arises that a project proponent must be able to answer.

Deforestation and forest fragmentation in Dong Hua Sao have been high in recent years and are strongly associated with the Nam Phak Hydropower Project, among other drivers and, especially, with the paved access road serving it. Two distinct mechanisms are at work, and they have different implications for the potential design of the Dong Hua Sao project.

The first is direct, authorized clearance for the dam footprint, reservoirs, transmission, and construction works. The second is induced access. A paved road into a formerly remote massif not only provides opportunities for access by trucks, tractors, and large machinery needed for timber extraction and clearing land at scale, but also changes the economic calculus of land conversion decision-making by lowering the cost of moving cassava to a buyer and moving timber out (refer back to Figures 4.2 and 4.3). The Project Description does note "improved access (dam road construction)" as an underlying cause but does not yet link this to any particular intervention strategy. Road-induced clearance is among the best-established regularities in the deforestation literature, and it is a driver that livelihood substitution in villages may do little to address.

Mineral exploration

The Bolaven Plateau has been the subject of bauxite and laterite exploration for many years, and the mineral sector nationally has expanded rapidly. By mid-2024, the government reported 968 companies authorized to invest in mining, holding some 3,186 km^2 of licensed area, with rare earth projects among the fastest-growing categories.[171] In neighboring Attapeu, 10 companies were awarded 15 projects covering 2,766 km^2 — more than a quarter of the

170 GlobalData. (n.d.). *Power plant profile: Nam Phak, Laos.* https://www.power-technology.com/marketdata/power-plant-profile-nam-phak-laos/; Hobo Maps. (2026). *Nam Phak Dam, Bolaven Plateau — project information.* https://hobomaps.com/NamPhakDamBolaven.html; VCEC. (n.d.). *Nam Phak Hydropower (Champasak Province, Laos) — capacity (160+8) MW*. https://vcec.vn/en/projects/consultant-survey-design/

171 KPL. (2024). "Gov't approves almost 1,000 mining projects." Lao News Agency. https://kpl.gov.la/En/detail.aspx?id=83413

province — with villagers reporting loss of farmland and conversion of designated protected zones.[172]

Our analysis identifies recent mineral exploration concessions abutting Dong Hua Sao. While exploration concessions have not been granted within the project area, there are both direct and indirect risks. Directly, exploration is the first stage of a pipeline that may eventually end in extraction with on-the-ground impacts that may spillover into the carbon accounting area, as has happened in the past.[173] Indirectly and more immediately, exploration and any subsequent development takes agricultural land and displace its users, pushing land pressure into the protected area exactly as the rubber concessions have done on the western flank. A project that monitors only its own boundary will likely see the resulting clearance as encroachment by villagers without adequately identifying or addressing the underlying cause.

Finding 3. Potentially overlapping forest-carbon claims threatens both project viability and wider reputational risk.

Chaleun Sekong Carbon (CSC), a subsidiary of the developer of the Nam Phak hydropower dam, publicly claims forest-carbon project areas totaling approximately 3.45 million hectares across seven Lao provinces, secured through a sequence of memoranda with the Ministry of Agriculture and Forestry in February 2023, November 2023, and June 2024.[174] Importantly, one portion of this carbon claim area — the 1.8 million hectare "Paksong Project" maps onto the Dong Hua Sao crediting area, presenting a risk of double counting. While this should normally be handled by excising the area of the park from Chaleun's carbon concession area, the current lack of clear boundary demarcation between one project and the other is an area of concern not currently addressed in the project design. That the same corporate group holds both the hydropower concession and the overlapping carbon claim compounds the point and presents potential conflict of interests between the developers of the projects and state authorities.

Since the granting of the CSC carbon concession (framed as a joint venture) in the southern provinces, the regulatory framework has significantly advanced in ways that create greater clarity for the Dong Hua Sao project. Ministry of Agriculture and Forestry Decision No. 4565/MAF, issued 6 September 2024 and effective 29 October 2024, requires forest-carbon investors to hold an operating license, to sign an MOU with the Department of Forestry, to demonstrate land-use rights or village agreements, to complete a feasibility study within one year, and to lodge a deposit with state authorities. It specifies that such arrangements are partnerships rather than land concessions and confer no exclusive rights over forest resources.[175] The national Carbon Credit Decree followed in May 2025,[176] providing clearer disclosure and reporting rules that will help to avoid potential double counting.

172 Radio Free Asia (RFA). (2023). "Villagers in Laos worry large mining concession will disrupt their lives." https://www.rfa.org/english/news/laos/mining-02152023102831.html

173 Bauernschuster, S., Pichler, M., Nanhthavong, V., Bernhard, R., Epprecht, M. and Gingrich, S. (2022). "Carbon emissions from land acquisitions in Laos." *Ecology and Society, 27*(3), art. 45. https://doi.org/10.5751/ES-13395-270345

174 Chaleun Sekong Carbon Company Limited. (2026). "About." https://cscarbon.la/about; CarbonFi. (2026). "The carbon credits project" and "Our team." https://www.carbonfi.org/

175 Tilleke & Gibbins. (2024). "Decision on forest carbon management in Laos: MAF Decision No. 4565/MAF." https://www.tilleke.com/insights/decision-on-forest-carbon-management-in-laos/

176 Global Green Growth Institute (GGGI). (2025). *Lao Government adopts Carbon Credit Decree.* https://gggi.org/lao-government-adopts-carbon-credit-decree/

Finding 4. Subsequent legislative reforms have made the project's tenure model unviable.

"Land tenure clarification and delineation of land rights" appears as a single bullet within the project's first activity area; elsewhere the draft Project Description describes "some combination of clarification of land titles, [and] capacity development activities" as "under consideration." Tenure is thus positioned as one candidate activity among twenty — rather than a core and necessary intervention — contingent on the outcome of consultations that were still in progress at the time of drafting.

The draft Project Description claims that the state owns the carbon due to its ownership of forest land. Because all natural forest and forestland outside private plantation management is state property under the Forestry Law,[177] and because the DoF is a project proponent, "project ownership is assured."[178] It then states that, "Communities that live in or around the park do not have legal land rights in the project area." Customary use is said to be "considered" through consultation, "with the expectation that community land rights are formally delineated and clarified, possibly integrating controlled use zones under the Forestry Law (2019)." The Project Description does note, in its review of the (now superseded) Land Law, that customary rights may be acquired through more than 20 years of use predating 2019[179] — but it treats this as a possibility to be explored rather than as a legal fact bearing on its own ownership claim.

In the years following the drafting of the Project Description, legislative reforms have since moved on considerably. National Assembly Resolution 57, adopted in 2024, amends Articles 44 and 130 of the Land Law[180] to permit people living in state forest areas to receive land titles for permanent agricultural, residential, and construction land, and to have their rights recognized through a combination of instruments: forest management and protection contracts, land-use certificates, and land title registration. It is expected to affect more than 3,000 villages nationally.[181] Implementing guidance has followed through Prime Minister's Order 20 and MAF Ministerial Instruction 1821, which set out procedure and eligibility. The direction is consistent with the 2023 Decree on Protected Areas, which for the first time formally recognizes the land tenure of inhabitants who were living within a protected area before its designation, and introduces a "guardian village" model of conservation contracts.[182]

These recent legislative changes have significant implications for the design of the Dong Hua Sao project. Households whose houses, buildings, and permanent agricultural land within the protected area predate the 1993 designation are eligible for land titles; other agricultural land with pre-designation claims is eligible for land-use certificates. Given the settlement history set out in Section 4.2, this is not a marginal category. It is a substantial share of the people the project proposes to restrict.

177 Lao PDR. (2019b). *Law on Forestry No. 64/NA.* National Assembly

178 Project Management Unit of the Korea-Laos REDD+ Joint Project. (n.d.). Project Description. (p. 10)

179 Lao PDR. (2019a). Land Law (amended). National Assembly

180 Lao PDR. (2024). National Assembly Resolution No. 57 on the recognition of land use rights in state forest areas (amending Articles 44 and 130 of the Land Law). National Assembly.

181 Mekong Region Land Governance (MRLG). (2024) "Laos takes a significant step toward securing land rights for forest communities." https://www.mrlg.org/news/laos-takes-a-significant-step-toward-securing-land-rights-for-forest-communities/; GRET. (2025). "Better land tenure security for forest communities in Laos." https://gret.org/en/news/2025/better-land-tenure-security-for-forest-communities-in-laos/; Forest Trends. (2026). Lao People's Democratic Republic — Illegal Deforestation and Trade country profile. https://www.forest-trends.org/idat_countries/lao-peoples-democratic-republic/

182 Lao PDR. (2023). Decree on Protected Areas. Office of the Prime Minister; WCS Lao PDR. (2023). "Lao PDR adopts the Protected Areas new decree to safeguard and restore biodiversity." https://laos.wcs.org/

The VCS Standard requires that projects and their activities not lead to the violation of any applicable law, "regardless of whether or not the law is enforced" — the provision on which the Myanmar project in this study was initially denied registration. The draft Project Description indicated that there were no legal claims to land within the protected area, an assertion no longer supportable given legislative reforms. The re-design of the project will need to address legitimate and legally recognized land rights.

Carbon rights follow land rights. MAF Decision 4565 requires forest-carbon investors to demonstrate land-use rights or village agreements. If titles and land-use certificates are issued to households after the project has started crediting, the project will be obliged to renegotiate the legal basis of its own carbon ownership mid-period, with whatever consequences follow for credits already issued. Doing the tenure work first converts a future liability into a present asset: a documented, village-level rights base on which a defensible carbon rights arrangement can be built.

Enforcement without tenure formalization risks criminalization. The Project Description proposes gate control, expanded patrols, and restriction of shifting cultivation. Applied to households with recognized claims, these measures might violate rights otherwise sanctioned under revised legislation. Under CCB, this is a net-negative community impact by any reasonable reading.

Insecure and unclear tenure is itself a driver of deforestation. Where the only way to demonstrate a claim is to visibly use the land, clearing is rational behavior. Thus, the announcement of a conservation project that may restrict future use is an incentive to clear now. Formalization with a cut-off date reverses that incentive, strongly implying that tenure formalization should precede crediting. Eligibility is anchored to a cut-off (1993), and the process is conducted transparently, village by village, with a public display of claims and an accessible dispute mechanism. The result is exactly what a REDD+ project requires and currently lacks: a mechanism, rooted in national legislation, that differentiates historically legitimate land claims from newer, illicit claims over land more recently cleared. This mechanism is currently envisaged within developing protocols for land rights adjudication.

Finding 5. Current carbon financing is not enough to deliver a credible project.

The design set out above is more expensive than the design envisioned in the Project Description. A credible and effective project in Dong Hua Sao cannot be financed at US$5 per ton, as indicated in the Project Description. A purchase price near US$5 sits below the cost of producing the credit, before a single benefit reaches a household.[183] A 2017 review study found that the average cost of REDD+ was US$24.87 per credit (i.e., per metric ton CO_2-equivalent).[184] What the finance has to cover is also larger than the current draft Project Description implies. Tenure formalization at the scale required needs survey, adjudication, public display, dispute resolution, and registration across dozens of villages. Agricultural alternatives must be good enough to compete with cassava at the household level, which means addressing credit and market access, not only agronomy. Protected area management requires staff, equipment, and recurrent budget. Monitoring under VM0048 is more demanding than earlier methodologies. A grievance mechanism must be independently staffed. And on top of all of that, the benefit share must be large enough that a household with a

183 Wooldridge, P. (2025). "A new era for high-quality avoidance: The new floor price for REDD+ carbon credits." Abatable. https://abatable.com/blog/the-new-floor-price-for-redd-carbon-credits

184 Rakatama, A., Ram, P., Chungo, M., Sayed, I. (2017). The costs and benefits of REDD+: A review of the literature. *Forest Policy and Economics,75,* 103–111. https://doi.org/10.1016/j.forpol.2016.08.006

new land title regards participation as a better proposition than clearing land for production.

The honest conclusion is that credit revenue at the proposed price (c. $5 per ton) cannot be the primary financing instrument for a socially credible project at Dong Hua Sao. This is not an argument against the project. It is an argument about the instrument. Where the purchase price is treated as the design constraint, the design is cut to fit the price, and the components cut first are invariably tenure formalization, benefit sharing, and grievance handling — the components with no carbon accounting line and the greatest bearing on whether the project harms people.

4.4 Recommendations

Recommendations for Dong Hua Sao

The Dong Hua Sao project provides a strong, if challenging, opportunity for doing REDD+ well. It provides a possibility for a project that is effective along both its biophysical and social axes — delivering meaningful carbon benefits as well as positive social outcomes for affected communities. The current Project Description is not yet up to the task of doing this, as the designers are no doubt aware. We thus propose several key changes:

1. **Rebuild the driver and agent analysis around the main, structural drivers of deforestation** based on spatial evidence, disaggregating agents by capital and origin (resident smallholder, local business actor, non-local business actor, authorized concession-holder), and specify a distinct, realistic intervention pathway for each of these.

2. **Compile and publish a concession and investment register** for Dong Hua Sao and a defined zone of influence around it — hydropower, transmission, roads, mining exploration and extraction, agricultural and forestry concessions, and forest-carbon claims — with instrument type, area, status, holder, and expiry. Update it at each monitoring event and make it a monitored parameter of the project. Absent such a registry, Korea and its project proponent partners will not be able to assess and mitigate risks arising from concessions in and around the project.

3. **Establish an explicit no-go and mitigation protocol for new concessions.** Seek a written commitment from central and provincial authorities that no new extractive or plantation concession will be issued within the accounting area or the leakage belt for the crediting period, and define in advance the consequence for crediting and benefit sharing if one is. Absent such a commitment, it will be particularly challenging to assure buyers of the project's claims both to effectiveness and permanence.

4. **Resolve the overlapping carbon claim with Chaleun Carbon before validation.** Obtain a written determination of the geographic scope and legal status of any other forest-carbon instrument covering Paksong district and the Dong Hua Sao area from the Department of Forestry, and disclose the outcome in the Project Description.

5. **Make tenure formalization a precondition to validation.** Complete titling and land-use certification under National Assembly Resolution 57 and its implementing instruments, for all eligible households in and adjacent to the accounting area, before the project seeks validation and before any crediting period begins. This has substantial cost and time implications, which we address below, but is necessary to avoid infringing on land rights. Base the ownership and carbon rights claim on the resulting rights structure together with MAF Decision 4565 and the Carbon Credit Decree.

6. **Convert enforcement into agreement.** Replace gate control and expanded patrols as headline activities with negotiated forest management and protection contracts under Resolution 57 and guardian-village arrangements under the 2023 Protected Areas Decree, in which resident rights-holders are paid parties establishing and enforcing forest protection measures with defined obligations rather than subjects of policing.

The landscape of the Dong Hua Sao is a peopled, working landscape rather than an unpopulated forest. As such, community-level stakeholders of Dong Hua Sao should play a central role in the design and execution of the project. Their meaningful engagement will require full and effective recognition of their land rights and a robust social engagement starting with free, prior, and informed consent (FPIC) and project co-design. The risks of deforestation are substantial and, while local communities do indeed play an important role in this, they operate within a set of structural factors that need to be taken seriously and engaged with appreciatively. Displacement of local land uses from concession areas surrounding the protected area are a key ongoing driver, as is approved road networks and concessions within the Park itself. New legislation surrounding both tenure rights and proper procedure for carbon investment provide an excellent platform on which to build a better project, should Korea be willing to invest the money needed to get it there.

Recommendations for Korea's Jurisdictional Program in Phongsaly

The Korea Forest Service is preparing a jurisdictional-scale REDD+ program in Phongsaly Province, in the far north of Lao PDR, as an extension of its engagement in the country beyond the pilot-scale Dong Hua Sao project in Champasak. This is a welcome moment to apply the lessons of the Dong Hua Sao case before design choices are locked in — and to do so at a scale substantially larger than the Dong Hua Sao accounting area. The recommendations below extrapolate directly from our Dong Hua Sao case report, adapted to what is structurally different about Phongsaly: a jurisdictional rather than project-level accounting boundary, at least 13 officially recognized ethnic groups practicing a range of customary and rotational land-use systems, a legacy of opium-substitution programming, and a landscape whose principal economic relationship is cross-border trade with China.

1. **Build the driver and agent analysis at jurisdictional scale, and do not let village-level clearance stand in for the whole picture.** The Dong Hua Sao Project Description named village poverty and weak governance as the principal drivers of loss; our independent analysis found the leading edge of clearance associated instead with authorized infrastructure, road access and (local and non-local) business actors operating where tenure was unclear and, at the same time, inducing land scarcity and thus smallholder encroachment into the Park. A provincial baseline needs the same disaggregation — by district, by actor type, and by whether conversion is subsistence, commercial, or concession-driven — rather than a single narrative built around smallholder farmer-driven deforestation applied uniformly across 13 ethnic groups and eight districts.

2. **Treat rotational, fallow-based cultivation as a land-use system with its own accounting logic, not as a default deforestation driver.** Much of Phongsaly's upland agriculture has historically been practiced on fallow cycles that regenerate forest cover over time. Conflating this with permanent commercial conversion would criminalize customary livelihood systems at a scale far larger than one protected area, and close to an international border where the consequences of enforcement error are harder to see and to remedy. Driver analysis will need to

determine, not assume, where and when conversions within swidden areas become permanent crops.

3. **Compile a concession and cross-border investment register for the jurisdiction first.** Phongsaly's economy runs substantially on trade with China — timber, rubber, contract-farmed bananas, watermelons, and other products moving north — in a pattern structurally similar to the Vietnamese rubber concessions and non-local business actors we identified displacing land pressure at Dong Hua Sao. Extend that recommendation to the whole province: register concessions and known contract-farming arrangements by sector, area, holder, and status, and secure a written commitment against new concessions inside the accounting area for the crediting period. Because concessions are probably inevitable irrespective of such a commitment, establish a contingency plan and redress mechanisms before these happen.

4. **Make tenure formalization a precondition, and sequence it district by district rather than assuming uniform, province-wide readiness.** NA Resolution 57, the 2023 Protected Areas Decree, MAF Decision 4565, and Instruction 1821 apply nationally and open the same legal path for tenure rights recognition in Phongsaly as at Dong Hua Sao. But formalizing rights across 13 ethnic groups with differing customary systems, and a resettlement history tied to opium substitution, is a substantially larger undertaking than at a single national protected area. Nested crediting should follow tenure formalization and concession-mapping district by district, not precede it uniformly across the province.

5. **Address the proponent's conflict of interest at jurisdictional scale, where it is structural rather than incidental.** At Dong Hua Sao, the implementing partner was an agency implicated in the land-allocation decisions it was then asked to police. Where a single provincial or national authority both authorizes concessions and administers an entire jurisdictional program, that same incentive scales with the territory under its control. An independent verification layer, public concession disclosure, and community interviews conducted without the concession-granting or enforcement agency present should be built into the program design.

6. **Design a nested, multi-level benefit-sharing architecture before validation, not a single project-level mechanism.** A jurisdictional program spanning many more villages and at least two additional layers of administration (provincial and district) needs benefit sharing specified at each level — allocation formula, decision-making body, payment mechanics, and audit — anchored in the rights structure created under Recommendation 4, published before credits are sold rather than assembled afterward.

7. **Fund the preconditions up front, and expect to pay more to deliver real and socially equitable outcomes.** A wider driver set, more ethnic groups, more remote terrain, and a larger tenure task raise the fixed cost of doing this properly above what a single protected area required, while jurisdictional baseline allocation under VM0048 is likely to yield fewer credits per hectare than project-level accounting. Korea should be prepared to pay the full cost of quality credits, e.g., based on a set of activities that are effective, fair, and accurately quantified, including by providing funds upfront for tenure security, concession management, and monitoring capacity.

Phongsaly is, in short, a potential replication of the Dong Hua Sao case — similarly risking misaligned drivers, unmanaged concession risk, tenure treated as optional, and a price that cannot fund the design it implies — but multiplied across a much larger and more heterogeneous territory, with a correspondingly larger cost of getting it wrong. It is also, precisely because it is still at the design stage, the clearest remaining opportunity to get it right.

5. Discussion, Conclusion, and Overall Recommendations

This report set out to answer a practical question and to draw lessons from this for wider application. The Republic of Korea is preparing to become one of the world's larger public investors in REDD+, beginning with three pilot projects in Southeast Asia — Tumring in Cambodia, the North Zamari Wildlife Sanctuary in Myanmar, and the Dong Hua Sao National Park in Laos. Korea's method of engagement is unusual and, in principle, advantageous: rather than purchasing credits on the open market once they have been generated, the Korea Forest Service has funded these activities from inception and therefore holds real influence over how they are designed. We asked what that influence has so far produced, and what it could produce if improved. We assessed each project against three tests — whether it durably reduces deforestation, whether it avoids harm to the people living in the project area and shares benefits fairly, and whether it avoids issuing more credits than the underlying reductions warrant.

The answers differ in detail across the three cases but converge on some common features that speak to underlying design challenges common under REDD+. In each, the diagnosis of forest loss names the people the project is able to act upon rather than the commercial and state-authorized drivers that clear most of the forest.[185] In each, the implementing partner is an agency implicated in the decisions that produced the deforestation it is now paid to police. In each, enforcement — immediate, cheap, and within the partner's capacity and mandate — substitutes for meaningful livelihood alternatives that are slow, costly, and structured in such a way as to be un-addressable. In each, third-party validation certified conformity with the rules rather than the accuracy of the claims regarding baselines, (underlying) drivers, and appropriate targets of intervention. And where impact can be measured, it is absent. Baselines are high, risk estimates are low, and the money involved is far too small to alter any household's decision about land. This pattern is well documented in the wider literature on implemented REDD+ projects, which is one reason to read these three cases as characteristic rather than exceptional.[186]

Two conclusions follow from these, and these are not in tension with one another. The first is that the instrument is easy to game, and its incentives run consistently in one direction — toward a diagnosis the project can more easily act on, and toward baselines generous enough to fund the work. Verra's newer methodology, VM0048, closes the most permissive of those doors by allocating baselines from a jurisdictional budget rather than allowing developers to construct their own, but it does not reach the diagnosis, the choice of proponent, the reliance on enforcement, or the price.[187] The second is that this is not an argument against financing forest protection. It is an argument about how, through whom, and at what price. Dong Hua Sao is still at the design stage; Korea's larger jurisdictional programs are

185 Bauernschuster, S., Pichler, M., Nanhthavong, V., Bernhard, R., Epprecht, M., Gingrich, S. (2022). Carbon emissions from land acquisitions in Laos. *Ecology and Society. 27*(3), art. 45. https://doi.org/10.5751/ES-13395-270345; Davis, K. F., Yu, K., Rulli, M. C., Pichdara, L., D'Odorico, P. (2015). Accelerated deforestation driven by large-scale land acquisitions in Cambodia. Nature Geoscience, 8(10), 772–775. https://doi.org/10.1038/NGEO2540; Ingalls, M. L., Meyfroidt, P., To, P. X., Kenney-Lazar, M., Epprecht, M. (2018). The transboundary displacement of deforestation under REDD+. Global Environmental Change, 50, 255–267. https://doi.org/10.1016/j.gloenvcha.2018.04.003

186 Haya, B. K., Alford-Jones, K., Anderegg, W. R. L., et al. (2023). Quality assessment of REDD+ carbon credit projects. Berkeley Carbon Trading Project, Goldman School of Public Policy, University of California, Berkeley. https://gspp.berkeley.edu/berkeley-carbon-trading-project/REDD; Lestrelin, G., Trockenbrodt, M., Phanvilay, K., et al. (2013). The context of REDD+ in the Lao People's Democratic Republic: Drivers, agents and institutions. Occasional Paper 92. CIFOR. https://doi.org/10.17528/cifor/004227

187 Verra. (2023). *VM0048 Reducing emissions from deforestation and forest degradation, v1.0*. https://verra.org/methodologies/vm0048-reducing-emissions-from-deforestation-and-forest-degradation-v1-0/; Haya, B. K., Alford-Jones, K., Anderegg, W. R. L., Holm, J. A., & West, T. A. P. (2024). Quality assessment of Verra's updated REDD+ methodology (VM0048) [Policy brief]. Berkeley Carbon Trading Project, University of California, Berkeley. https://gspp.berkeley.edu/berkeley-carbon-trading-project/redd

still being shaped. The problems identified here are, at this moment, correctable if decision-makers are willing to do so.

From these cases, we propose the following overall recommendations to the Korea Forest Service, and to any government or institution preparing to invest at scale in REDD+.

1. Do not treat the Tumring credits as credible emission reductions. Our impact evaluation, applying six established causal-inference methods across multiple control sets and matching specifications, finds no evidence that the project reduced deforestation between 2015 and 2025, and indicates that the official baseline was inflated. This is consistent with a now substantial body of ex-post evaluation finding that REDD+ projects systematically overstate their emission reductions,[188] and with methodological work showing that flexibility in baseline construction is the principal source of that overstatement.[189] The 645,410 credits issued to the project should therefore not be counted toward Korea's Nationally Determined Contribution and, by our assessment, should be cancelled on the Verra registry. Under Article 6, the consequence of doing otherwise is not merely reputational: the host country is required to make a corresponding adjustment against reductions that did not occur, so a measurement failure in Tumring becomes a shortfall in two national accounts at once. Separately, KFS should commission an independent investigation — independent of Cambodian authorities and of all institutions involved in the project's delivery — into the harms documented during the project, including arrests, crop destruction, and the unaccounted seizure of household equipment, with redress for those affected should these be proven to be warranted. There is precedent for such abuses going undetected by validators for years in Cambodian REDD+ projects[190] and no reason to expect the existing assurance chain will surface them.

2. Discontinue North Zamari in its present form and redirect the committed funds. Verra denied registration on 12 December 2025, nine years and four deadline extensions after the crediting period began, on the grounds that the project could not demonstrate compliance with applicable law.[191] While the project proponents have putatively addressed the immediate reasons for registration denial and re-submitted for verification, this does little to address the fundamental issues facing the projects: two rival entities (the de facto government of Myanmar and the National Unity Government that opposes it) claim the credited land, and neither fully controls it; the National Unity Government has stated in advance that it will not honor permits of this kind; and the project's own risk report prices a civil war at zero. There is also a longer record, in Myanmar and elsewhere, of protected-area designation functioning as a means of extending central state authority over contested ground rather than as a means of protecting forest.[192] Better outcomes are available. The Karen National Union — the ethnic resistance organization that administers much of Kayin State and

188 Guizar-Coutiño, A., Jones, J. P. G., Balmford, A., Carmenta, R., & Coomes, D. A. (2022). A global evaluation of the effectiveness of voluntary REDD+ projects at reducing deforestation and degradation in the moist tropics. *Conservation Biology, 36*(6). https://doi.org/10.1111/cobi.13970; West, T. A. P., Wunder, S., Sills, E. O., et al. (2023). Action needed to make carbon offsets from forest conservation work for climate change mitigation. Science, 381(6660), 873–877. https://doi.org/10.1126/science.ade3535; Probst, B. S., Toetzke, M., Kontoleon, A., et al. (2024). Systematic assessment of the achieved emission reductions of carbon crediting projects. Nature Communications, 15, 9562. https://doi.org/10.1038/s41467-024-53645-z

189 West, T. A. P., Bomfim, B., & Haya, B. K. (2024). Methodological issues with deforestation baselines compromise the integrity of carbon offsets from REDD+. *Global Environmental Change, 87*, 102863. https://doi.org/10.1016/j.gloenvcha.2024.102863

190 Human Rights Watch. (2024). Carbon offsetting's casualties: Violations of Chong Indigenous people's rights in Cambodia's Southern Cardamom REDD+ project. Human Rights Watch. https://www.hrw.org/report/2024/02/29/carbon-offsettings-casualties/violations-chong-indigenous-peoples-rights

191 Verra (2025). Project 1848, Korea–Myanmar Joint Bago Region REDD+ Program: VCS registration and CCB validation approval request denied [Letter, 12 December 2025]. The denial cites VCS Standard v4.7 §3.1.4, which requires that a project not lead to the violation of any applicable law, regardless of whether or not the law is enforced.

192 Woods, K. (2019). Green territoriality: Conservation as state territorialization in a resource frontier. Human Ecology, 47(2), 217–232. http://www.jstor.org/stable/4515428; Woods, K., & Naimark, J. (2020). Conservation as counterinsurgency: A case of ceasefire in a rebel forest in southeast Myanmar. *Political Geography, 83*, 102251. https://doi.org/10.1016/j.polgeo.2020.102251; see also Brockington, D. (2002). *Fortress Conservation.* James Currey.

adjoining territory in eastern Bago — has held those forests since the 1950s, operates its own forestry department, recognizes customary *kaw* tenure with registration procedures, and has ratified two large Indigenous conservation landscapes governed jointly with Karen villages and civil society.[193] A credited activity in that territory does not require authorization from Nay Pyi Taw unless the credits are to carry an Article 6 or CORSIA label.[194] Alongside this, non-credited support to forest governance — with the National Unity Government's ministry and with ethnic administrations that hold territory — is both feasible and demonstrated: a recent remote-sensing monitoring and capacity-building program covered more than a million hectares of protected forest and ended only because its funding period closed.[195]

3. Redesign Dong Hua Sao before validation. Rebuild the driver and agent analysis on the spatial evidence, disaggregating agents by type and origin — resident smallholder, local business actor, non-local business actor, authorized concession-holder — and specify a distinct intervention pathway for each. Focus on the structural, underlying drivers of change rooted in political decision-making rather than the downstream outcomes of these decisions manifested through local farmer actions. Treat the paved access road and its laterals as an explicit driver and model post-road risk directly, rather than inheriting a risk allocation built on pre-road historical patterns — particularly given that the allocated risk map for Lao PDR has not been released, so the project cannot presently know its own baseline. Compile and publish a concession and investment register for the park and a defined zone of influence, covering hydropower, transmission, roads, mineral exploration, agricultural and forestry concessions, and forest-carbon claims, and resolve the overlapping carbon claim asserted over the same districts before validation. Whether through the project or independent of it, a transparent, government-led task force with power and mandate sufficient to meaningfully address challenges arising from existing and any new concessions needs to be established. Make tenure formalization under Resolution 57 and its implementing instruments a precondition of validation rather than one candidate activity among twenty,[196] and rebase the ownership and carbon rights claim on the resulting rights structure. Finally, replace or complement gate control and expanded patrols as headline activities with negotiated forest management and protection contracts and guardian-village arrangements, in which resident rights-holders are paid parties with defined obligations rather than subjects of policing.[197]

4. Continue providing upfront investment to enable the conditions for a credible carbon project. Tenure formalization, driver and concession analysis, free prior and informed consent, grievance mechanisms, and protected area management capacity should be fully funded upfront. Where the purchase price is treated as the design constraint, the design is scaled to fit the price, and the components cut first are invariably those with no carbon accounting line and the greatest bearing on whether the project harms people: tenure work, benefit sharing, and grievance handling.

193 Kawthoolei Land Policy, chs. 1 and 3, (2015). Myanmar; Karen National Union Forest Policy (KESAN), Charter of the Salween Peace Park (2018). Myanmar. Covers approximately 5,500 km^2; the Thawthi Taw-Oo Indigenous Park, declared 10–12 December 2024, covers 575,450 hectares and 318 villages.

194 VCS Standard v4.7 §3.7 requires the proponent to demonstrate the legal right to control and operate the activity and to the resulting credits. Host-country authorization becomes necessary where national law imposes it, or where credits carry an Article 6 or CORSIA label requiring host-country attestation and corresponding adjustment.

195 Woods, K., & Chan, N. (2026). "Behind the pixels: Monitoring deforestation in post-coup Myanmar." Global Forest Watch. https://globalnaturewatch.org/blog/users-in-action/monitoring-deforestation-post-coup-myanmar/ The program ran from June 2024 to April 2025, covering more than one million hectares of protected forest across five townships in Sagaing and Magway.

196 Lao PDR (2024). National Assembly Resolution No. 57 on the recognition of land use rights in state forest areas (amending Articles 44 and 130 of the Land Law). National Assembly. Implementing guidance follows through Prime Minister's Order 20 and MAF Ministerial Instruction 1821. See also: MRLG (2024); GRET (2025); Forest Trends (2026). Lao People's Democratic Republic — Illegal Deforestation and Trade country profile. https://www.forest-trends.org/idat_countries/lao-peoples-democratic-republic/

197 Ministry of Agriculture and Forestry [Lao PDR]. (2024). Decision No. 4565/MAF on forest carbon management, issued 6 September 2024, effective 29 October 2024; Lao PDR (2023). Decree on Protected Areas, which recognizes the tenure of inhabitants living within a protected area before its designation and introduces the 'guardian village' model of conservation contracts.

5. Fund the actors who are invested in protecting forests. As the Cambodia and Myanmar chapters showed, people dependent on forests for their livelihoods are the most invested in conservation. At Tumring, community forest members and the Prey Lang Community Network have been working to patrol and protect their forests for close to two decades, on no salary and against considerable personal risk; it was community advocacy, not the project, that halted commercial logging inside the community forests. The same logic applies across all three countries: community forest user groups and *kaw* territories in Karen areas of Myanmar, and guardian villages and holders of forest management and protection contracts under the new Lao framework. Direct funding to such groups, and to Indigenous networks working toward Indigenous communal land titles on forested areas, is inexpensive relative to project overheads and is supported by the evidence in this report. **The most effective form of forest protection is to financially support those who depend on the forest and thus have an in-built incentive to conserve it.**

6. Buy independent evidence, not assurance. In all three cases, auditors paid by the developer they audit confirmed that calculations were *permitted r*ather than that they were accurate. At Tumring, verifiers assigned risk ratings of zero for project longevity, land tenure, and community engagement, and accepted a claim of financial viability without any analysis of land values. At North Zamari, only 11% of credits are put aside to insure against the risk of increased forest losses just from natural risk such as fire in a landscape whose largest material risk is armed conflict and civil war, whose land and carbon rights are contested, and where modeling finds much higher natural risk. This is a structural problem rather than a failure of particular firms: the auditor is selected and paid by the party it assesses, must exercise subjective judgement under conditions of high complexity and information asymmetry, and typically visits the site for only a few days.[198] Private certification does not, on the available evidence, reliably secure environmental integrity.[199] A buyer of Korea's standing can fund verification directly, on terms that permit findings to be published and registration to be withheld — and can require that community interviews be conducted without the enforcement agency present, which alone could have changed the findings in two of these three cases.

7. Pay more for high quality, credible carbon. An anticipated purchase price of US$5 per ton sits below the cost of producing a compliant credit under the current methodology, before any benefit reaches a household; independent analysis places production cost considerably higher. Prevailing low prices are themselves an artifact of the over-crediting that ex-post evaluations have repeatedly identified, so paying a legacy price for a project built to a stricter, more credible methodology is paying yesterday's price for tomorrow's obligations. Our evidence, and a growing body of supporting literature worldwide, indicates that carbon financing must be substantially increased on a per-ton basis if it is to deliver meaningful outcomes. Paying a higher price for carbon will, however, fail to achieve meaningful outcomes unless those resources go to the appropriate actors (see Recommendation 5 above). Where a project cannot be financed at a price high enough to do it properly, an alternative would be to fund forest protection and tenure security directly through bilateral cooperation, rather than to build a crediting project that is under-resourced by design.

8. Act now, while there is still substantial room to maneuver. An accumulation of low-quality credits would put the Korean industrial sector in a difficult position if and when those credits fail to deliver, and the difficulty compounds under Article 6, where corresponding adjustments transfer the consequences of a measurement failure into two

198 Coglianese, C., & Giles, C. (2025). Third-party auditing cannot guarantee carbon offset credibility. University of Pennsylvania Law School, Public Law Research Paper No. 25-28. https://dx.doi.org/10.2139/ssrn.5345783

199 Seyller, C., Desbureaux, S., Ongolo, S., Karsenty, A., Simonet, G., Faure, J., & Brimont, L. (2016). The 'virtual economy' of REDD+ projects: Does private certification of REDD+ projects ensure their environmental integrity? *International Forestry Review, 18*(2), 231–246. https://doi.org/10.1505/146554816818966273

national accounts at once. The pilots are where the portfolio's assumptions are visible and still inexpensive to correct. The jurisdictional programs now being prepared — in Laos, Vietnam, Honduras, and elsewhere — could inherit whatever design logic the pilots establish, and they will do so across an area two orders of magnitude larger. Hence, it is crucial at this stage to address legacy issues inherited from the pilot projects that would affect fundamental aspects of jurisdictional program design, so as to avoid exposing Korea to project failure and reputational harm.

Taken together, these steps describe the difference between buying carbon and protecting forests, and doing so in a way that is socially credible. The distinction matters because these can look identical on paper and diverge completely on the ground — which is, in essence, what the ethnographic literature on implemented REDD+ has been reporting for more than a decade.[200]

Many of these recommendations, that are needed to design of effective, fair, and harmless REDD+ projects, require more than what can be written into the rules and requirements of a carbon crediting program. This is especially true given the incentives to cut corners and exaggerate carbon credits, and the failures of third-party auditors to enforce hard-to-measure program requirements. Quality projects must be developed on a clear understanding of the history and drivers of deforestation in the area, the interests and needs of communities who depend on and use those forest areas, and the distribution of project risks and benefits.

Korea is unusually well placed to meaningfully invest in effective and socially-credible forest conservation. It funds from inception, it holds direct relationships with proponents, and it is early enough in its program that its design assumptions remain open. The three pilots show what happens when the instrument is allowed to define the diagnosis. Dong Hua Sao and Korea's jurisdictional programs offer the chance to reverse that order — to begin from the drivers, the rights-holders, and the price, and to let the crediting follow — and, in doing so, to demonstrate how a REDD+ investment can be effective, credible, and fair to the people who live in the forest.

200 Milne, S., Mahanty, S., To, P., Dressler, W., Kanowski, P., Thavat, M. (2019). Learning from 'actually existing' REDD+: A synthesis of ethnographic findings. *Conservation and Society, 17*(1), 84–95. https://doi.org/10.4103/cs.cs_18_13; Milne, S. (2022). *Corporate nature: An insider's ethnography of global conservation*. University of Arizona Press. https://doi.org/10.2307/j.ctv37scfkf



MEKONG CENTER

UC Berkeley
Carbon Trading Project

Plan 1.5