

Quality Assessment of Verra's Updated REDD+ Methodology (VM0048)

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Our study, [Quality Assessment of REDD+ Carbon Credit Projects](#), released September 2023, brought together researchers with deep expertise in REDD+ baseline-setting, leakage assessment, forest carbon accounting, quantification of durability risk, and social safeguards, to assess the quality of the four most used REDD+ carbon crediting methodologies – VM0006, VM0007, VM0009, and VM0015 (Haya et al., 2023). We found that the methodologies, as written and as implemented by projects, significantly overestimated project benefits and that safeguard policies did little to avoid harm. This policy brief analyzes whether VM0048, Verra's newest REDD+ methodology approved in November 2023, in combination with the latest updates to its VCS Standard, address the sources of over-crediting and poor safeguarding that we documented in our September 2023 study.

We find that VM0048 improved the baseline methods, a change that will likely substantially reduce the very high levels of over-crediting from baseline choices by previous VCS methodologies. The new methodology also includes some improvement to its permanence risk assessments and safeguards standards. However, the methodology still does not account for international leakage and market leakage from reduced agricultural production, and prescribes unrealistically low estimates of risk of reversal, which are likely to lead to over-crediting. But the worst instances of over-crediting and poor safeguarding from VCS REDD+ projects registered under previous methodologies were not from the written requirements themselves but from their poor implementation by developers and poor verification by auditors in practice. Verra announced that it is updating its verification system, but those updates have not been laid out in any detail, and we won't know if they will lead to effective enforcement of methodological requirements until we have some experience with them in practice.

The Integrity Council on the Voluntary Carbon Market (ICVCM) is tasked with assessing which project categories deserve its high-integrity Core Carbon Principle (CCP) label. The CCP label is reserved for project categories with robustly and conservatively quantified emissions and removal benefits and which conform with best practices on social and environmental safeguards while delivering sustainable development benefits. We find that VM0048 is likely to result in over-crediting in several ways and should update its leakage, non-permanence risk assessment, and safeguard standards to be consistent with rigorous science and best practice. More importantly, given the pervasiveness of enforcement problems to date, we believe that a robust verification system that ensures effective implementation of the methodology and standard must be demonstrated through independent ex post analysis of program outcomes.

Summary of September 2023 study findings on pre-VM0048 REDD+ methodologies

We found surprisingly widespread over-crediting from all parts of the four REDD+ methodologies we examined and poor compliance with the safeguards policies. Our work built on existing literature that has found substantial over-crediting from baseline selection (Guizar-Coutiño, 2022; Seyller, 2016; West et al., 2020; West et al., 2023; Withey, 2021) and lack of compliance with the letter and spirit of safeguards standards (Atela, 2015; Hengeveld, 2023; Milne & Mahanty, 2019; Sarmiento & Barletti, 2017; Scheba & Rakotonarivo, 2016; Téllez Chávez, 2024).

In examining why poor quality is so extensive, we found that:

- the methodologies and standards are inconsistent with the scientific literature on carbon accounting, climate risks to permanence, and safeguard effectiveness;
- the methodologies provide developers with wide flexibility in methods for assessing project benefits and credits, and with that flexibility, developers are making choices that lead to high rather than conservative estimates; and
- verifiers are not enforcing compliance with the requirements in the methodologies and VCS standards, including the requirement that methodological choices should be conservative (more likely to under-credit than to over-credit when there is uncertainty).

Please see the Executive Summary of our 2023 study (Haya et al., 2023) for an expanded summary of our findings.

We lay out below our assessment of whether VM0048 and VCS's most updated standards resolve these problems for baselines, leakage, durability, and safeguards.

Assessment of VM0048

Baselines

VM0048 goes a long way to reduce flexibility in baseline setting and therefore in over-crediting from baselines. We don't know yet if the baseline map methods will accurately assess deforestation risk and prevent over-crediting due to adverse selection. Only ex post analysis will be able to assess the accuracy of the models used to develop national deforestation risk/baseline maps and whether project developers cherry pick areas with high baselines but lower risk for reasons not captured by the mapping models (Balmford et al., 2023; Delacote et al., 2022).

Baselines are likely a very large source of over-crediting from VCS REDD+ credits under the pre-VM0048 methodologies. Earlier research found over-crediting of over thirteen times due to baseline choice from a diverse sample of REDD+ projects (calculated from West et al., 2023). The baselines chapter of our September 2023 study, subsequently published in *Global Environmental Change* (West et al., 2024), found that extremely wide flexibility in baseline setting combined with failure by verifiers to enforce conservativeness can help explain the high levels of over-crediting documented by ex post assessment (Guizar-Coutiño, 2022; Seyller, 2016; West et al., 2020; West et al., 2023; Withey, 2021).

VM0048 dramatically reduces baseline flexibility by engaging independent assessors in developing baseline deforestation risk maps for entire countries or subnational jurisdictions. Still, adverse selection has been found to have led to high levels of over-crediting from improved forest management projects in the United States that engage a similar mapping approach to baseline setting. Badgley et al. (2021), Coffield et al. (2022), and Stapp et al. (2023) all find that project developers choose to enroll lands with high existing carbon stocks and relatively low risk of loss by using carbon stock maps based on regional and forest type averages. Comparisons with more refined forest type mapping (Badgley et al., 2021) and with similar control plot areas and past management practice on project lands (Coffield et al., 2022; Stapp et al., 2023) found the systematic enrollment of lands with higher carbon stocks and lower risk of loss than the maps suggest. Ex post analysis through case studies and comparisons with similar control plots will still be needed to assess whether similar adverse selection of project areas based on local knowledge of risk not captured by jurisdictional risk maps plays out similarly for VM0048 REDD+ projects.

Leakage

Leakage accounting under previous methodologies likely led to significant levels of over-crediting. While the standards used by the methodologies align with the literature on market leakage rates (20-70%), in practice almost all projects applied low leakage rates (0-21%; see the Leakage chapter appendix [Table 3.A14] in our September 2023 study). Our four case study projects each had substantial risk of leakage but applied zero or low leakage rates.

The new protocol continues to ignore important and well-documented types of leakage: international leakage and leakage from displaced agricultural production. An extensive modeling literature on indirect land use change from the expansion of biofuels crops finds significant deforestation risk (e.g., Daioglou et al., 2020; Merfort et al., 2023). Forest conservation on lands that would otherwise have been converted to croplands creates a similar leakage risk.

Further, we see little indication to date that Verra has resolved the poor enforcement of its leakage requirements.

Durability

While the newest version of Verra's AFOLU Non-Permanence Risk Tool offers marginal improvements, those improvements do not come close to bridging the immense gap between the estimates of risk from natural reversals used by the projects we reviewed and our estimates for the same projects based on historical disturbance rates estimated through analysis of remote sensing imagery.

The new protocol uses Verra's AFOLU Non-Permanence Risk Tool v4.2, which was released in October 2023 and has not had significant updates since then. Improvements over previous (e.g. pre-2022) approaches include: 1) developers are no longer allowed to apply risk scores of less than zero for any of the three main risk categories; 2) the minimum buffer pool deduction was increased from 10% to 12%; and 3) natural risk assessments must coarsely consider the effects of climate change.

However more significant changes are needed to adequately insure against natural reversal risk and thus avoid over-crediting: 1) the natural risk table of the NPRT v4.2 (table 10) that determines projects' buffer pool contributions for a given disturbance regime does not appear to be based on peer-reviewed data and is likely far too low in many disturbance regimes (Anderegg et al., 2024); 2) wide flexibility offered to developers to select the disturbance regimes appropriate for their projects (i.e., the frequency and severity of past disturbances) also likely allows significant potential for misrepresentation and over-crediting; and 3) all risk categories allow large reductions of risk if projects undertake "mitigating activities", yet it is unclear how these reductions were decided and if they are reasonable or based on rigorous science. We also have not seen indication that mitigation measures are being verified. On the natural risk side, mitigating activities appear to be far too generous and are also difficult to prove. The "adaptive capacity" criteria are also vague and benefits are still unproven. Both mitigation activities and adaptive capacity allow for substantial leniency and compounding chances to underestimate risk. Taken together, Verra's AFOLU Non-Permanence Risk Tool v4.2 should not be considered a strong or robust approach to durability.

Safeguards

Safeguard policies are presented as assurance that projects do not result in harm. In our 2023 study which covered Verra safeguard standards and procedures through v4.3 (adopted in 2022), we found two types of problems with the policies. Verra’s standards themselves lagged behind international standards. But the more fundamental problem was that Verra’s standards were neither being followed by developers nor enforced by verifiers. Our review of projects validated over time under different versions of the VCS Standard between 2011 and 2019 found little evidence that stronger standards led to more stringent safeguarding by developers or expanded due diligence by auditors.

Safeguards are important for REDD+ projects. Numerous studies of VCS REDD+ projects and similar grant-based REDD+ projects have shown that projects, while seeking to improve the well-being of forest communities by providing new revenue streams and support for alternative sustainable livelihoods, also posed risks. REDD+ projects tend to focus on changing the behavior of smallholders largely because of the greater political and economic costs of trying to control the larger commercial drivers of deforestation. Many do this through restricting smallholders’ use of forest resources (Skutsch & Turnhout, 2020). Our September 2023 study found that most VCS REDD+ projects focus on changing the behavior of smallholders and do this with restrictions. These restrictions can fall hardest on vulnerable and marginalized populations since they are often more reliant on the forest for their subsistence and those who are better off often receive more project benefits (Duker et al., 2019; Griffiths, 2008; Kansanga & Luginaah, 2019; Mutabazi et al., 2014; Poudel et al., 2015; Ratsimbazafy et al., 2011; Satyal et al., 2020; To et al., 2017). In the worst cases, REDD+ has led to evictions from forests and human rights abuses (Chomba et al., 2016; Griffiths, 2008; Howson, 2017; Sarmiento Barletti & Larson, 2017). Moreover, in many tropical forest regions land tenure is contested and Indigenous customary land rights are not recognized or upheld. When REDD+ projects unfold in contexts of past displacement and land grabs, they can reinforce and perpetuate inequity and dispossession.

Our study of projects using Verra’s safeguard standards through v4.3 found a wide variation in quality of project documents and audit reports. While the auditing process is the main way that Verra enforces safeguards standards and processes, we found that it is common for auditors not to address information discrepancies, possible illegalities, documented harms, and lack of data to substantiate safeguard compliance. Auditors commonly approved projects where common sense suggested safeguard non-compliance, and accepted developer corrective actions without evidence of substantive changes. In some cases, projects were positively validated and verified, while safeguard-related issues were simply moved to “forward action requests”, or FARs, to be reviewed at the next audit.

We found many instances of poor safeguards implementation and enforcement. We offer the following examples to illustrate some of the types of safeguard failures that revised standards would need to address:

Stakeholder consultations: Auditors accepted public consultations conducted through distributing flyers, even in regions with low levels of literacy (e.g., VCS1113). Sometimes developers and auditors resorted to conjecture to substantiate their findings. For example: “locals have been informed about project details through the newsletter published by CGI. Therefore it can be assumed that more than 50% of households living within the project area who are reliant on the project area have been consulted” (VCS902, 2014, *AFOLU Non-Permanence Risk Assessment*, p. 9). We found worrisome discrepancies in reporting on the numbers of affected households. For example, different VCS1113 reports by developers and auditors identified those living in the project area and affected by the project as “35 households”, “between 200 and 800 families”, “85 families”, and “about 20 families”.

Serious harms: Although Verra safeguards are required for a successful audit, recent media reports indicate that Verra has allowed projects to be validated and verified and to issue credits while serious harms occurred within the project area. One project in Brazil was positively verified when the developer and various subsidiaries had been investigated by federal agencies for illegal logging and had ongoing land tenure conflicts. The Forest Stewardship Council (FSC), which had certified the project developer, Jari Group, concluded an independent investigation that evidence existed “beyond a reasonable doubt” that the group had violated traditional and human rights of communities within its forest management area by failing to acknowledge land tenure rights, sometimes “using violence against community members in the process of claiming and defending its land tenure rights”. FSC also found that Jari Group conducted illegal logging and timber laundering (FSC, 2019). Whereas FSC formally disassociated from Jari Group in 2019 (FSC, 2019), auditor Rina validated and verified the Jari Pará project that same year, finding that the project met both VCS and CCB standards (VCS1811; Rina, Validation Report, 2019; Rina, Verification Report, 2019).

In Guatemala, risks to communities with contested land tenure rights within a project area were not mentioned by the project developer in any of its reports, and the violent eviction of hundreds of families from the area in early June 2017 (Morales et al., 2017; IACHR, 2017) was not mentioned in the verification report finalized a few weeks later, nor in a project description document dated October of that year (VCS1384, Project Description 2017). In Cambodia, a detailed human rights investigation by Human Rights Watch documented widespread violations of Indigenous peoples’ rights including violation of the right to free, prior, and informed consent, the arrest and detention of community members without trial, arbitrary home searches, and evictions (VCS1748; Téllez Chávez, 2024). In Kenya, the Centre for Research on Multinational Corporations exposed long-standing sexual abuse in a project audited and positively verified almost every year since 2011 (VCS612; Hengeveld, 2023).

Punting to FARs: In other cases, auditors recognized serious deficiencies in project implementation, yet instead of requiring the developer address them prior to verification, auditors simply noted them as “forward action requests” (FARs). In VCS1113, the auditor summarized: “open FARs point to potential issues related to the degree of project implementation, project

boundaries and ex post GHG reduction estimates, effective consultation processes with communities, worker training, health and safety and compliance with labor legislation in the country, the maintenance of free, prior and informed consent about the activity of land titling to the communities, the presentation of specific data and parameters requested by the methodology and related to remote sensing and the promotion of exceptional benefits to the communities". The audit report concludes that the developer should respond to these potential non-compliance issues before a future verification is complete, and that at present, "the project implementation is in full conformance with the VCS standard" (Rainforest Alliance, 2017, p. 78).

Verra made several important improvements to its written safeguard standards in its VCS Standard in 2023. These include expanded reporting requirements for stakeholder engagement and consultation, more explicit requirements to include assessment of Indigenous peoples and customary land rights and use rights, clearer criteria regarding identification of risks to stakeholders and impacted peoples, and explicit requirements to respect human rights in accordance with international human rights law.

Verra's current safeguard standards and procedures (see VCS Standard v4.7) also still fall short of international standards. The UN Guiding Principles on Business and Human Rights (UNGPR; 2011) clarify human rights obligations under international law for non-state actors such as Verra. These include respecting human rights, adopting human rights due diligence processes, and providing remedy to anyone who is harmed where the business caused or contributed to the harm. Verra has not adopted, nor asked project developers to adopt, a commitment to undertake human rights due diligence. Moreover, neither VM0048 nor Verra's own grievance policies reflect best practice. Grievance mechanisms should be legitimate, accessible, predictable, equitable, transparent, rights-compatible, a source of continuous learning and, for mechanisms operating at the project level, based on dialogue and engagement (UNGPR, 2011).

To Verra's credit, some projects have been suspended due to safeguard-related issues, yet it is concerning that these suspensions occurred not as part of a standard auditing process, but rather in response to NGO investigations and media reports.

Most importantly, Verra's new standard appears to have done little to address the fundamental problem of safeguards enforcement. The most recent formal Guidance document for VVBs (auditors) on the Verra website is from 2016, before the inclusion of Safeguards and, obviously, all the substantive changes in VM0048. The April 2024 (v4.7) VCS Standard simply adds a paragraph of guidance on stakeholder engagement and interviews by auditors (4.1.14, p. 63). More fundamental changes are needed to address the core problem that developers commonly fail to comply with safeguard criteria and procedures and verifiers commonly fail to enforce them (see some recommendations in the Safeguards chapter and Executive Summary of our September 2023 report, Haya et al., 2024).

Conclusions

VM0048 improved VCS REDD+ baselines methods, which will likely substantially reduce the very high levels of over-crediting from baseline choices by previous VCS methodologies. The new methodology also includes some improvement to its permanence risk assessments and safeguards standards. While VCS has taken these important improvements from previous methodologies, those improvements do not go far enough to avoid over-crediting, avoid harm, and ensure high quality. We lay out several additional material changes that would be needed to accurately and conservatively estimate project benefits, account for non-permanence risk, and align safeguards with best practice. Without these additional changes, projects are still likely to over-credit and fail to ensure harm to forest communities is avoided.

Looking beyond the language of the methodologies and standard themselves, we see that program incentives, mechanisms, and processes have not supported effective implementation and auditing, leading to pervasive lack of compliance with program requirements, over-crediting, and harm from some projects. Verra has described some changes it is making to their accountability systems in broad terms, but neither have provided details on how they will work, nor evidence that they are sufficient.

Given the pervasiveness and depth of over-crediting documented with previous REDD+ methodologies and poor compliance with safeguard standards, and that much of the quality problems originated during implementation and enforcement rather than from the language of the standard and methodology, it seems unquestionable that it is premature to certify VM0048 with the CCP quality label. Independent ex post review on the portfolio of registered projects will be needed before there can be confidence that the program does not significantly over-credit in practice and projects do not cause harm to people affected by the projects.

Verra policy documents reviewed

AFOLU Non-Permanence Risk Tool, v4.2 (May 3, 2024). <https://verra.org/wp-content/uploads/2023/10/AFOLU-Non-Permanence-Risk-Tool-v4.2-last-updated-May-3-2024.pdf>

VCS Standard, v4.7 (April 16, 2024). <https://verra.org/wp-content/uploads/2024/04/VCS-Standard-v4.7-FINAL-4.15.24.pdf>

VM0048 Reducing Emissions from Deforestation and Forest Degradation, v1.0 (November 27, 2023). <https://verra.org/methodologies/vm0048-reducing-emissions-from-deforestation-and-forest-degradation-v1-0/>

VMD0011 Estimation of emissions from market-effects (LK-ME), v1.2 (November 27, 2023). <https://verra.org/methodologies/vmd0011-estimation-of-emissions-from-market-effects-lk-me-v1-1/>

References

Anderegg, W. R. L., Trugman, A. T., Vargas, G., Wu, C., & Yang, L. (2024). *Current forest carbon offset buffer pools do not adequately insure against disturbance-driven carbon losses*. bioRxiv. <https://doi.org/10.1101/2024.03.28.587000>

- Atela, Joanes. (2015). Carbon in Africa's Agricultural Landscapes. In M. Leach & I. Scoones (Eds.), *Carbon Conflicts and Forest Landscapes in Africa* (pp. 79–93). Routledge.
- Badgley, G., Freeman, J., Hamman, J. J., Haya, B., Trugman, A. T., Anderegg, W. R. L., & Cullenward, D. (2021). Systematic over-crediting in California's forest carbon offsets program. *Global Change Biology*, gcb.15943. <https://doi.org/10.1111/gcb.15943>
- Balmford, A., Brancalion, P. H. S., Coomes, D., Filewod, B., Groom, B., Guizar-Coutiño, A., Jones, J. P. G., Keshav, S., Kontoleon, A., Madhavapeddy, A., Malhi, Y., Sills, E. O., Strassburg, B. B. N., Venmans, F., West, T. A. P., Wheeler, C., & Swinfield, T. (2023). Credit credibility threatens forests. *Science*, 380(6644), 466–467. <https://doi.org/10.1126/science.adh3426>
- 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>
- Coffield, S. R., Vo, C. D., Wang, J. A., Badgley, G., Goulden, M. L., Cullenward, D., Anderegg, W. R. L., & Randerson, J. T. (2022). Using remote sensing to quantify the additional climate benefits of California forest carbon offset projects. *Global Change Biology*, gcb.16380. <https://doi.org/10.1111/gcb.16380>
- Daïoglou, V., Woltjer, G., Elbersen, B., Ibañez, G. B., Strengers, B., Gonzalez, D. S., Barno, J. G., van Vuuren, D. R. (2020). Progress and barriers in understanding and preventing indirect land-use change. *Biofuels Bioproducts & Biorefining-Biofpr*, 14(5), 924–934. <https://doi.org/10.1002/bbb.2124>
- Delacote, P., Le Velly, G., & Simonet, G. (2022). Revisiting the location bias and additionality of REDD+ projects: The role of project proponents status and certification. *Resource and Energy Economics*, 67, 101277. <https://doi.org/10.1016/j.reseneeco.2021.101277>
- Duker, A. E. C., Tadesse, T. M., Soentoro, T., de Fraiture, C., & Kemerink-Seyoum, J. S. (2019). The implications of ignoring smallholder agriculture in climate-financed forestry projects: Empirical evidence from two REDD+ pilot projects. *Climate Policy*, 19(sup1), S36–S46. <https://doi.org/10.1080/14693062.2018.1532389>
- FSC- Forest Stewardship Council (2019). Public Summary of the Policy for Association Investigation - Jari Group. <https://connect.fsc.org/current-cases/policy-association-cases/jari-group>
- Griffiths, T. (2008). *Seeing "REDD"?: Forests, climate change mitigation and the rights of Indigenous peoples and local communities*. Forest Peoples Program. <https://www.forestpeoples.org/en/topics/redd-and-related-initiatives/publication/2010/seeing-redd-forests-climate-change-mitigation-a>
- 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>
- 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, September 15). *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+>
- Hengeveld, M. (2023). *Offsetting human rights: Sexual abuse and harassment at the Kasigau Corridor REDD+ Project in Kenya*. SOMO. <https://www.somo.nl/offsetting-human-rights/>
- Howson, P. (2017). Intimate exclusions from the REDD+ forests of Sungai Lamandau, Indonesia. *Conservation and Society*, 15(2), 125–135. <https://doi.org/10.4103/0972-4923.204071>
- Inter-American Commission on Human Rights. (2017). *Situation of human rights in Guatemala*. OAS. <https://www.oas.org/en/iachr/reports/pdfs/Guatemala2017-en.pdf>

- Kansanga, M. M., & Luginaah, I. (2019). Agrarian livelihoods under siege: Carbon forestry, tenure constraints and the rise of capitalist forest enclosures in Ghana. *World Development*, 113, 131–142. <https://doi.org/10.1016/j.worlddev.2018.09.002>
- Merfort, L., Bauer, N., Humpenöder, F. *et al.* (2023). Bioenergy-induced land-use-change emissions with sectorally fragmented policies. *Nature Climate Change*, 13, 685–692. <https://doi.org/10.1038/s41558-023-01697-2>
- 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>
- Morales, D. T., Vidal Olascoaga, E., Paz Carrasco, M. Á., & Trujillo Ballinas, M. (2017). *Des-esperando en la frontera: Informe de la situación de la comunidad Laguna Larga a seis meses de su desplazamiento forzado* [Losing hope on the border: Report on the situation of the Laguna Larga community six months after its forced displacement]. Voces Mesoamericanas, Acción con Pueblos Migrantes A.C. <https://vocesmesoamericanas.org/wp-content/uploads/2017/12/InformeLAGUNA-LARGA-FINAL-web.pdf>
- Mutabazi, K. D., George, C. K., Dos Santos, A. S., & Felister M. M. (2014). Livelihood implications of Redd+ and costs-benefits of agricultural intensification in Redd+ pilot area of Kilosa, Tanzania. *Journal of Ecosystem & Ecography*, 4(2), 1000144. <https://doi.org/10.4172/2157-7625.1000144>
- Poudel, M., Thwaites, R., Race, D., & Dahal, G. R. (2015). Social equity and livelihood implications of REDD+ in rural communities – a case study from Nepal. *International Journal of the Commons*, 9(1), 177. <https://doi.org/10.18352/ijc.444>
- Ratsimbazafy, L. C., Harada, K., & Yamamura, M. (2011). Forest conservation and livelihood conflict in REDD: A case study from the corridor Ankeniheny Zahamena REDD project, Madagascar. *International Journal of Biodiversity and Conservation*, 3(12), 618–630. <https://academicjournals.org/article/article1380704324-Ratsimbazafy%20et%20al.pdf>
- Rainforest Alliance. (2017). *The Valparaiso Project VCS CCB Verification Report for Carbon Co.* https://registry.terra.org/mymodule/ProjectDoc/Project_ViewFile.asp?FileID=44232&IDKEY=u903q4jsafkasifu90amnmassdfkaidflnmddf9348r09dmfssdf95928
- Sarmiento Barletti, J. P., & Larson, A. M. (2017). *Rights abuse allegations in the context of REDD+ readiness and implementation: A preliminary review and proposal for moving forward*. Center for International Forestry Research. <https://doi.org/10.17528/cifor/006630>
- Satyal, P., Corbera, E., Dawson, N., Dhungana, H., & Maskey, G. (2020). Justice-related impacts and social differentiation dynamics in Nepal's REDD+ projects. *Forest Policy and Economics*, 117, 102203. <https://doi.org/10.1016/j.forpol.2020.102203>
- 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>
- 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>
- Skutsch, M., & Turnhout, E. (2020). REDD+: If communities are the solution, what is the problem? *World Development*, 130, 104942. <https://doi.org/10.1016/j.worlddev.2020.104942>
- Stapp, J., Nolte, C., Potts, M., Baumann, M., Haya, B. K., & Butsic, V. (2023). Little evidence of management change in California's forest offset program. *Nature Communications Earth & Environment*, 4, 331. <https://doi.org/10.1038/s43247-023-00984-2>
- Téllez Chávez, L. (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/2024/02/28/carbon-offsettings-casualties/violations-chong-indigenous-peoples-rights>
- To, P., Dressler, W., & Mahanty, S. (2017). REDD+ for Red Books? Negotiating rights to land and livelihoods through carbon governance in the Central Highlands of Vietnam. *Geoforum*, 81, 163–173. <https://doi.org/10.1016/j.geoforum.2017.03.009>

United Nations Human Rights Office of the High Commissioner. (2011). *Guiding Principles on Business and Human Rights*. https://www.ohchr.org/sites/default/files/documents/publications/guidingprinciplesbusinesshr_en.pdf

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>

West, T. A. P., Börner, J., Sills, E. O., & Kontoleon, A. (2020). Overstated carbon emission reductions from voluntary REDD+ projects in the Brazilian Amazon. *Proceedings of the National Academy of Sciences*, 117(39), 24188–24194. <https://doi.org/10.1073/pnas.2004334117>

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://doi.org/10.1126/science.ade3535>

Withey, L. S. (2021). *Sequestering livelihoods: REDD+, autonomy and adaptation on a Colombian forest frontier* [Unpublished doctoral dissertation]. University of California, Berkeley.