Enhancing Impact Assessments: Indigenous Inclusion in Palm Oil Expansion

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Abstract

The impacts of palm oil expansion on land rights and livelihoods are well-documented, yet business impact assessments (IAs) often prioritise environmental impacts while overlooking critical social consequences. This study focuses on Indigenous Q'eqchi' communities in Petén, Guatemala, where traditional agricultural practices have been supplanted by large-scale oil palm monocultures. Using a mixed-methods approach, this research combines literature review, case study analysis, and remote sensing to assess land-use changes from 2000 to 2023, alongside qualitative interviews that capture Indigenous perspectives on the impacts of palm oil expansion and the decision-making process. Findings indicate that the conversion to palm oil has led to significant loss of traditional lands, exacerbating social and environmental challenges for Indigenous peoples, particularly women. This highlights the urgent need for early and meaningful engagement of Indigenous communities in the IA process to ensure their concerns are fully addressed and regulatory clarity is achieved. While transition to agroecological practices are advocated for, the primary focus remains on the necessity of including Indigenous Knowledge in IAs to capture the full spectrum of impacts. This research emphasises necessity of policy reform for enhancing land rights and ensuring that IAs reflect the perspectives of Indigenous peoples. Ultimately, this study provides a framework for understanding the interplay between land rights, community well-being, and the need for inclusive decision-making in sustainable development.

1. Introduction

The expansion of oil palm plantations across the tropics is among the most significant land-use transformations of the 21st century. In Guatemala's northern Petén region, this shift has profound consequences for Indigenous Q'eqchi' communities whose traditional land management systems and cultural identities are inextricably linked to the forested landscapes they inhabit. While the material impacts of palm oil expansion—such as deforestation, pollution, and land conflicts—are increasingly documented, less attention has been paid to the effectiveness of agroecological alternatives or the integration of Indigenous perspectives within environmental and social impact assessments (IAs). Specifically, current literature often overlooks the ways in which IAs can perpetuate existing power imbalances and fail to account for the spiritual and cultural values tied to land.

This study seeks to fill these research gaps by examining how the transformation of Petén's agrarian frontier (a space of ongoing land contestation and resource extraction) has affected Q'eqchi' land rights and livelihoods and by evaluating the potential of agroecology and Indigenous knowledge to offer more inclusive and just assessment processes. Drawing on remote sensing analysis, literature review, and qualitative insights from Indigenous voices and grassroots experts, the research explores how palm oil monocultures are displacing milpa-based agroecologies and how Indigenous communities are responding to both the impacts and the governance failures of development.

The findings highlight the urgency of embedding Indigenous perspectives and land tenure considerations into IA frameworks, as well as supporting agroecological transitions that build

community resilience while respecting cultural values. Ultimately, this paper offers a reframing of assessment and mitigation practices through a lens of justice, plurality, and local autonomy. This reframing requires a shift from technocratic, top-down assessments to participatory processes that centre Indigenous knowledge and prioritise land rights as fundamental to social and ecological wellbeing.

2. Methodology

This study employed a mixed-methods approach to explore the social, environmental, and governance implications of palm oil expansion in Petén:

- Remote sensing and geospatial analysis: Sentinel-2 satellite imagery and USGS land use/land cover datasets (2000–2023) were used to track changes in forest cover and agricultural expansion, processed in QGIS.
- Systematic literature review: Over 50 peer-reviewed articles, policy reports, RSPO certification audits, and NGO publications were reviewed to assess current knowledge on palm oil's impacts and the role of agroecology in Guatemala.
- Case study analysis: Two agroecological initiatives were studied in depth: (1) the Utz Che' agroecology schools in Guatemala, and (2) the SAF Dendê agroforestry project in Brazil, offering comparative insights.
- Qualitative interviews and expert consultations: Interviews were conducted with Guatemalan scholars, NGOs, and practitioners to capture underrepresented community perspectives. Interviewees were selected based on their direct experience with palm oil expansion, their involvement in agroecological initiatives, or their expertise in Indigenous land rights.

Triangulation was achieved by comparing and contrasting data from remote sensing analysis, literature review, and qualitative interviews. For example, deforestation rates identified through remote sensing were corroborated by testimonies and literature regarding land loss and environmental degradation. This methodology ensured both quantitative robustness and qualitative depth, especially concerning Indigenous knowledge systems, gendered impacts, and local resistance strategies.

3. Palm Oil Expansion and the Erosion of Land Rights

3.1 Historical and Political Context

Petén has long been marked by contested land tenure systems, shaped by a history of colonialism, displacement during Guatemala's civil war, and uneven agrarian reform efforts. Although the 1996 Peace Accords promised greater protection for Indigenous land rights and established the *FONTIERRAS* land fund, implementation has been partial and slow due to bureaucratic obstacles, lack of political will, and resistance from powerful landowning interests. In this context, palm oil

companies have rapidly expanded operations since the early 2000s, often acquiring land through opaque processes or leasing land from *finqueros* (large landowners) with dubious titles.

3.2 Land Use Change and Dispossession

Remote sensing data reveals a pronounced transformation in land cover across central and southern Petén. Since 2000, forested and agroforestry landscapes have increasingly been converted into monoculture oil palm plantations, with a particularly sharp acceleration after 2012. This shift is illustrated in Figures 1 and 2, which present ESE CCI (Climate Change Initiative) land cover maps for the years 2000 and 2020 respectively. The maps highlight a marked increase in cropland area alongside a significant decline in primary forest cover over the two decades.



Figures 1 and 2: Land Cover Change in Petén, 2000 and 2020 (ESE CCI Land Cover Map)

Communities that traditionally practiced diversified milpa agriculture now find themselves encircled by expansive monocultures. These plantations contribute to soil degradation, water contamination, and habitat fragmentation. The displacement experienced is both physical and cultural, disrupting food sovereignty, spiritual practices, and local governance structures.

Further spatial analysis integrating palm oil mill locations, Sentinel-2 land cover data, and Indigenous territories is shown in images 3-6. These images demonstrate how palm oil plantations increasingly encroach upon Mayan Q'eqchi' communal lands, resulting in extensive forest loss and habitat fragmentation.







Figure 3: Palm Oil Mill Locations, Land Cover, and Indigenous Territories in Petén

To contextualize the scale of deforestation, Figures 3 presents data from Global Forest Watch (2023), showing the decline in primary forest cover in Petén between 2003 and 2023 through the images labelled 3-6.

Image 3 displays the locations of palm oil mills in 2019. The distribution of mills indicates areas of high palm oil production and serves as a reference point.

Image 4 uses Sentinel data to illustrate land cover in 2023. The map shows limited forest cover and large agricultural lands in areas adjacent to palm oil plantations. The data underscores the significant environmental impact of palm oil plantations in the region.

Image 5 highlights the borders of Indigenous territories within the Department of Petén. The overlay of palm oil plantations with these areas reveals the proximity of palm oil production to Indigenous lands which are traditionally held in common. It indicates the potential threats to traditional livelihoods and land rights.

Image 6 integrates all three datasets to provide a holistic view of the situation. It illustrates the location of palm oil mills in areas experiencing land cover change which are home to Indigenous communities. The visual shows the encroachment of palm oil plantations into Mayan Q'eqechi' land and highlights the type of land cover now present in Indigenous territories. It shows that land traditionally belonging to these communities has been transformed due to palm oil plantation expansion. It represents the complex interplay between palm oil expansion, environmental degradation, and the land rights of Indigenous communities, emphasising the need for policy intervention to safeguard these areas.



Figure 4: Primary Forest Loss in Petén, Guatemala (Global Forest Watch, 2023)

This visual analysis reveals the transformation of large tracts of Indigenous land, with the loss of forest cover and the fragmentation of habitats. Figure 4 provides statistical context to the land cover change images by highlighting the scale of deforestation; this data shows a decline in the percentage of primary forest remaining between 2003 and 2023 in the region.





Displacement is both physical and cultural, as the erosion of access to land disrupts food sovereignty, spiritual practices, and collective governance. Figure 5 illustrates these food security implications by

charting the rate of palm oil expansion over a 30-year period in Guatemala, as well as the relationship between land use and key crops in the region.

4. Indigenous Perspectives and the Limitations of Impact Assessments

4.1 Exclusion from IA Processes

As Figure 3 shows, the spatial overlap of palm oil plantations with Indigenous territories underscores the critical need for inclusive impact assessments. However, Q'eqchi' communities are frequently excluded from meaningful participation in these processes, which are often conducted in Spanish and involve technical jargon inaccessible to local populations. Furthermore, community consultations are often perfunctory or held only with selected leaders under pressured conditions.

A recurring theme in responses was the perception that IAs serve to justify projects, rather than prevent harm. The concept of Free, Prior and Informed Consent (FPIC) remains aspirational rather than operational in most cases. Specifically, companies often fail to provide communities with adequate information about the potential impacts of projects, fail to obtain their consent prior to commencing operations, and exert undue influence over the consultation process.

4.2 Gendered Impacts and Cultural Loss

Women have borne a disproportionate share of the burdens from palm oil expansion. Their roles as custodians of seeds, knowledge of medicinal plants, and caretakers of milpa systems have been undermined. As land becomes privatised or industrialised, women's access to resources narrows, their labour increases, and their safety is often compromised during land disputes. For example, women reported spending more time traveling to find firewood and water due to deforestation and water contamination, leaving them with less time for other activities. These impacts are rarely acknowledged in assessment documents or corporate sustainability reports. Indeed, a review of several EIA reports for palm oil projects in Petén found that gender was either not mentioned at all or treated superficially, with no analysis of the specific impacts on women's livelihoods and wellbeing.

5. Agroecology as a Culturally Grounded Alternative

Agroecology offers a framework for reimagining development that is aligned with Indigenous cosmologies and priorities. Defined not only as a set of practices but as a socio-political movement, agroecology promotes biodiversity, food sovereignty, and resilience—while challenging the extractive logic of monocultures.

5.1 The Utz Che' Agroecology Schools

In Guatemala, the *Utz Che'* network of Indigenous organizations has developed agroecology schools that train youth and community members in traditional farming techniques, ecological restoration, and territorial defence. These techniques include intercropping, crop rotation, and the use of organic fertilizers and pest control methods. These schools operate as spaces of cultural revitalisation, political education, and practical experimentation. In interviews, participants highlighted how

agroecology enables autonomy and intergenerational knowledge transfer—elements absent from conventional development models.

5.2 Comparative Case: SAF Dendê in Brazil

The *SAF Dendê* project in Pará, Brazil, integrates oil palm into diversified agroforestry systems codesigned with smallholder communities. While situated in a different national context, the project demonstrates how oil palm can be cultivated within ecologically and socially sustainable frameworks—offering a model that contrasts sharply with Guatemala's dominant plantation model. Importantly, both cases underscore that technical viability is only one aspect; political will and secure land rights are equally essential. Specifically, the SAF Dendê project offers insights into how agroforestry systems can enhance biodiversity, improve soil health, and provide diversified income streams for smallholder farmers. However, it is important to acknowledge that the SAF Dendê model also faces challenges related to market access, technical assistance, and the long-term sustainability of oil palm cultivation within agroforestry systems.

6. Barriers to Agroecological Transition

While the promise of agroecology is clear, its implementation faces structural challenges in Guatemala:

- Land tenure insecurity makes long-term planning difficult, especially in areas where communal claims are contested. Many Q'eqchi' communities lack formal land titles, making them vulnerable to land grabbing and displacement.
- Limited access to financial support, seeds, and technical training hinders widespread adoption. Government subsidies and agricultural extension services tend to favour conventional, monoculture-based agriculture.
- Opposition from agribusiness and political actors, who benefit from existing land concentration and monoculture models, can suppress agroecological initiatives through legal or violent means. For example, community leaders involved in agroecological projects have faced threats, intimidation, and even violence from those seeking to protect their economic interests.

Moreover, without policy incentives or recognition within IA frameworks, agroecology remains marginalised despite its proven benefits.

7. Toward Transformative Impact Assessments

Current IA frameworks in Guatemala remain rooted in a technocratic model that prioritises extractive investment over social justice. To become tools of transformation rather than legitimisation, impact assessments must:

• Integrate Indigenous knowledge and values from the earliest stages, including spiritual and relational dimensions of land use (e.g., the sacredness of certain sites, the importance of reciprocity between humans and nature).

- Enable community-led assessments, including participatory mapping, oral histories, and cultural indicators.
- Recognise agroecological systems not just as mitigation, but as development pathways in their own right.
- Prioritise land tenure and governance as foundational components of environmental and social sustainability.

Emerging tools, such as environmental DNA (eDNA) and advanced biodiversity monitoring, offer potential for more inclusive and transparent assessment processes by enabling community-based monitoring and providing objective data on environmental impacts, though these tools are only as effective as the systems in which they are implemented, and require broader policy shifts and capacity building to realize their full potential. Specifically, eDNA can be used by community members to monitor water quality and biodiversity levels, providing them with the data they need to advocate for environmental protection. Moreover, policy must extend beyond IA frameworks to include land tenure reform, agricultural subsidies, and trade policies that support agroecology and Indigenous land rights.

For IA practitioners, this means investing in capacity building for participatory assessment methods, creating space for Indigenous voices in the assessment process, and advocating for policy reforms that support land rights and agroecology.

8. Conclusion

The expansion of palm oil in Petén has intensified long-standing struggles over land, identity, and ecological survival. For Q'eqchi' communities, these challenges are not abstract: they are lived daily through displacement, declining food security, and cultural erosion. While current impact assessments are ill-equipped to reflect this complexity, alternative approaches grounded in Indigenous knowledge and agroecology offer hope for more just and sustainable outcomes.

This research calls for a reframing of both development and assessment—one that recognises plural epistemologies, affirms Indigenous rights, and supports ecologically sound livelihoods. As tropical landscapes continue to be reshaped by global commodity chains, the question is not whether assessments can be improved, but whether they can be transformed, guided by those whose futures are most at stake. The urgent need is for a shift from assessments as instruments of compliance to assessments as vehicles for empowerment, enabling Indigenous communities to shape their own futures.

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