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Dissertation Research Brief

Title: Deforestation, Development, Disclosure, and Data: A review of supply chain standards and technologies to achieve corporate deforestation commitments and the Sustainable Development Goals

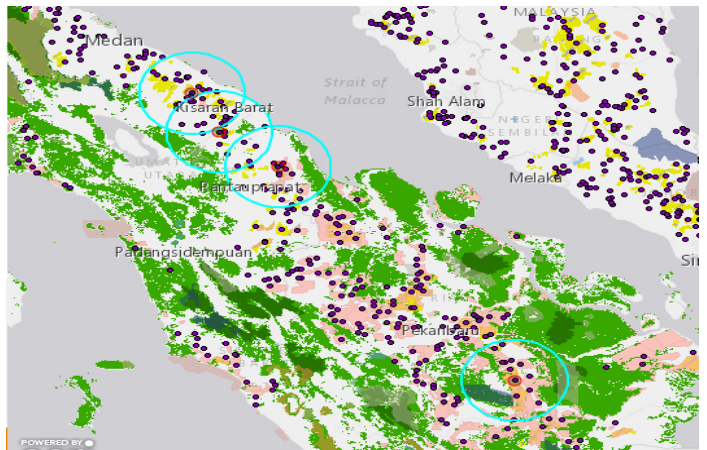
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Key message: Current sustainability indicators for palm oil supply chain traceability and transparency lack standardization, acknowledgement of ecological thresholds, and alignment with Sustainable Development Goal (SDG) 15 – Life on Land. To achieve zero-deforestation commitments, companies must address the impacts of deforestation and risk to supply chains by increasing traceability and transparency through mapping suppliers and risks, engaging suppliers and stakeholders, setting science based targets, and monitoring and verifying operations.

Main Findings

- Companies are off-target to achieve commitments to remove deforestation from palm oil supply chains (POSC) by 2020. Of 112 companies with commitments to remove deforestation from supply chains, only 6 are actively implementing successful programs, participating in international sustainability standards, and pursuing sustainability certification.
- The issue is not that there are no sustainability indicators, the issue is that companies do not yet know who is involved in supply chains or what they should be measuring.
- There is an overall lack of coordination between private sector, government, NGOs, and standard-setting organizations, with numerous standards, indicators, and metrics developed each addressing different aspects of supply chain traceability, requiring different information, and aligned to different goals and targets. No standards identified fully aligned with the targets of SDG 15, meaning private and public-sector targets are misaligned.
- Emerging technologies make data accessible and affordable addressing information gaps hindering traceability. These enable identification of suppliers and hotspots, and improve monitoring. **Figure 1** shows an example of publicly available data from the Global Forest Watch identifying mill location in relation to high-risk deforestation areas and estimate of supplier location—info that can be used to prioritize and target sustainability efforts

Figure 1 Example of Satellite data showing palm oil mills in relation to deforestation



Introduction

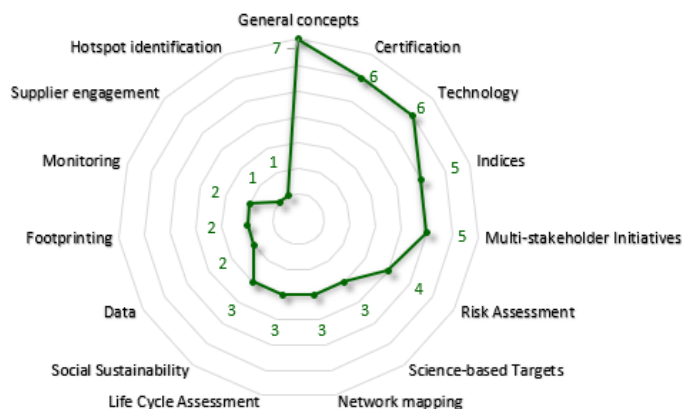
The complexity of POSC coupled with expansion of palm oil cultivation to meet market demand has led to negative sustainability impacts that worsen with continued deforestation and put company supply chains at risk. To address their role in deforestation, companies have committed to remove deforestation from supply chains by 2020. However, there is no standard for measuring these programs and thus every company is using a different standard or metric, meaning no company can be equally compared against another. In addition, existing standards don't align with SDG 15 or ecological thresholds,

meaning measurements are disregarding key environmental and social targets. This paper aims to identify how companies can increase POSC traceability and transparency (T&T). After analyzing existing indicators and mechanisms, evaluating alignment with SDG 15 targets, and identifying key gaps and next steps in supply chain sustainability reporting and management, a systematized review was conducted to identify key themes, mechanisms, and tools for improving T&T.

Methods

A systematized review was conducted using a structured search strategy resulting in 240 peer-reviewed articles and 35 grey literature reports. Literature was categorized using a framework synthesis to identify key themes and emerging trends related to supply chain traceability. 37 articles identified as ‘Thesis support’ were reviewed with grey literature to identify the main themes (**Figure 2**): Certification, technology, indices, multi-stakeholder initiatives, risk assessment, science-based targets, and network mapping. These themes were developed into a Risk Identification Framework (RIF) that addresses the underlying issues affecting progress toward deforestation commitments—the lack of data and information about supply chain actors and places. The RIF addresses these barriers through 3 steps using specific tools:

Figure 2 Summary of Data Extraction: Mechanisms for Increasing Traceability and Transparency



1) Mapping

- Network mapping
- Hotspot identification
- Risk assessment

2) Certification

- Supplier engagement
- Multi-stakeholder initiatives
- Science-based targets

3) Monitoring

- Supplier engagement
- Capacity development
- Technology integration

Technology emerged as a key theme, which was explored through additional searching and analysis, identifying technological applications for mapping, certification, and monitoring such as satellite imagery, blockchain, software systems and platforms, and mobile technology. The method was limited by reviewer-selected search terms and resources constraints on the review (e.g. time and one reviewer).

Policy and Industry Implications

Policy stands to aid or deter traceability and transparency efforts at the corporate level with company policies requiring supplier reporting on sustainability metrics, and at the national and global level requiring company reporting on environmental and social impacts against a standardized scale. What is reported and by whom can become a mandate like accounting or financial reporting, or fall to the side of the policy and corporate agenda. Company and government policy should include:

- Interdisciplinary collaboration between private and public sector to address knowledge gaps and implementation barriers for supply chain T&T
- Science-based targets and ecological thresholds to form the basis of any future standards
- Incentives for sustainable practices and participation in monitoring or certification schemes
- Removal of barriers hindering use of technology for forest monitoring in tropical forest countries and mandates to use technology for T&T in supply chains

The policy approach toward sustainable palm oil production and deforestation can determine a country’s current environmental and social impacts, and trade-offs between present economic benefits and future resource availability. The question remains as to whether companies will voluntarily implement sustainable palm oil production across their supply chains, or whether this must be mandated. Governments and company’s may use a variety of policy instruments that incentivize or deter unsustainable practices by palm oil suppliers.