

and considerable modifications need to be made to RSPO certification criteria and their monitoring and evaluation, particularly in regards to environmental and social sustainability. The high degree of variation in environmental and social conditions between palm oil concessions prior to certification are poorly accounted for in RSPO policies, conflating participation and performance in the scheme. For example, deforested concessions are more easily able to meet zero deforestation targets (Carlson *et al* 2018) and less likely to have resident populations of threatened species that require management (Meijaard *et al* 2017). Similarly, concessions without peat soil are less vulnerable to fire than concessions with large proportions of, or in close proximity to, degraded peat soils (Turetsky *et al* 2015). In lieu of fixed figure targets (i.e. 'zero deforestation', 'zero burning') and ambiguous targets ('maintain populations', 'promote positive impacts'), it may be advisable for RSPO P&C to adopt quantitative proportion based performance indicators to account for variation in baseline conditions and monitor performance relative to a concessions initial condition. Proportion based indicators also allow for performance to be monitored relative to each countries legal framework and interpretations of RSPO P&C.

At present, the estate level focus of RSPO appears to limit the ability of the scheme to deliver broad benefits. For example, the specification to 'maintain and enhance' high conservation value species ignores the biology and behavior of many species the scheme is trying to protect, such as the orangutan. Orangutans are known to have large home ranges and utilise parts of these ranges depending on seasonal food availability (van Schaik *et al* 2009). Given this, landscape level coordination between plantations known to overlap with existing orangutan populations is needed. Similarly, aims of contributing to local sustainable development and improve social impacts of plantation and mill operation, necessitates coordination between multiple stakeholders. The delivery of social benefits and infrastructure should therefore be developed and implemented at a larger village level rather than a per concession basis. Better alignment between scales of management and scales of the sustainability concerns, will not only increase program efficacy, but may also encourage smaller concession owners who lack the capacity to completely address large and complex goals, to contribute to collaborative endeavors. New jurisdictional approaches that aim at certifying entire administration units, such as the Malaysian State of Sabah or the Indonesian Province of Central Kalimantan in Borneo may address this critical and complex issue.

The 2018 revision of RSPO P&C and the implementation of the advanced certification scheme, 'RSPO next' provides an important opportunity to adopt critical changes to strengthen the certification scheme. Opportunities for improvement within the RSPO P&C include clarification around key terms and concepts

as well as additional practitioner support. Vague concepts and terminology within RSPO P&C leave critical components of the sustainability program open to interpretation. Explicit definitions and standards for concepts such as 'indirect or secondary social and environmental impacts' and terms including 'high conservation value' and 'high carbon stock' need to be established by the RSPO with less reliance upon 'national guidelines'. The provision of greater support and guidance for concession owners on how to meet RSPO P&C's should be provided throughout the planning, implementation and reporting phases of development and operation. Environmental and social organisations are likely able to offer valuable knowledge and support in this regard through expert surveying, community consultation and landscape planning.

Industrial oil palm plantations are predicted to expand from 17–26 million hectares by 2050, with South America and Africa the new frontiers for development (Corley 2009, Sayer *et al* 2012, Pirker *et al* 2016). To prevent the adverse social and biodiversity impacts witnessed in South East Asia, plantation managers are encouraged to adopt RSPO management practices (Wich *et al* 2014). Given the effectiveness of RSPO to date, however, it is unlikely that current RSPO standards would achieve outcomes significantly better than 'business as usual'. For RSPO to meet the founding objective of 'promoting the growth and use of sustainable palm oil' within South East Asia and across the globe, considerable reform of the scheme is needed. The adoption of specific and measurable targets in particular, will not only assist in meeting this objective and improve RSPO, but will likely be of benefit environmental certification schemes overall.

Acknowledgments

We are thankful for the technical support provided by M Nunn. We acknowledge the Australian Research Council Centre of Excellence for Environmental Decisions for funding and support. CLM is supported by an Australian Research Training award, KAW was supported by an Australian Research Council Future Fellowship.

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References

- Abram N K *et al* 2014 Synergies for improving oil palm production and forest conservation in floodplain landscapes *PLoS ONE* **9** e95388
- Abram N K, Meijaard E, Wilson K A, Davis J T, Wells J A, Ancrenaz M and Gaveau D 2017 Oil palm–community conflict mapping in Indonesia: a case for better community liaison in planning for development initiatives *Appl. Geogr.* **78** 33–44