

# Accepted Manuscript

Options to reduce environmental impacts of palm oil production in Thailand

Kanokwan Saswattecha, Carolien Kroeze, Warit Jawjit, Lars Hein



PII: S0959-6526(16)30893-9

DOI: [10.1016/j.jclepro.2016.07.002](https://doi.org/10.1016/j.jclepro.2016.07.002)

Reference: JCLP 7574

To appear in: *Journal of Cleaner Production*

Received Date: 29 April 2016

Revised Date: 28 June 2016

Accepted Date: 1 July 2016

Please cite this article as: Saswattecha K, Kroeze C, Jawjit W, Hein L, Options to reduce environmental impacts of palm oil production in Thailand, *Journal of Cleaner Production* (2016), doi: 10.1016/j.jclepro.2016.07.002.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## Options to reduce environmental impacts of palm oil production in Thailand

Kanokwan Saswattecha<sup>a\*</sup>, Carolien Kroeze<sup>b</sup>, Warit Jawjit<sup>c</sup>, and Lars Hein<sup>a</sup>  
(Word count = 7,887)

- a) Environmental Systems Analysis Group, Wageningen University, Droevendaalsesteeg 3, 6708 PB Wageningen, The Netherlands
- b) Water Systems and Global Change group, Wageningen University, Droevendaalsesteeg 3, 6708 PB Wageningen, The Netherlands
- c) School of Allied Health Sciences and Public Health, Walailak University, 222 Thaiburi, Thasala, Nakhon Si Thammarat 80161, Thailand

\*Corresponding author. Tel. +31-6-3324-2067. E-mail address:  
kanokwan.saswattecha@wur.nl

Postal address: PO Box 47 6700 AA Wageningen

### Abstract

There is an increasing demand for palm oil worldwide. In Thailand, oil palm is being promoted by the government but this expansion is associated with several environmental impacts. We identified 26 options for reducing the environmental impact of palm oil production in Thailand, and assessed their cost-effectiveness. Our analysis includes measures that can be taken in plantations as well as in palm oil mills. We analysed the effects of the options in terms of reducing greenhouse gas emissions, acidification, eutrophication, photochemical ozone formation, human toxicity and freshwater ecotoxicity. Our analysis shows that *empty fruit bunch (EFB) combustion*, *wet scrubbers* and *pre-heating fiber* are the most effective in reducing multiple impacts. Among these, *EFB combustion* results in the largest environmental improvement, but at relatively high costs. Several options are found to be not only effective, but also generate a positive net return. These include *cover crops*, *harvesting ripe fruits*, *mulching EFB*, *EFB composting*, *EFB pellets production*, *oil loss recovery from decanter cake* and *pre-heating fiber*. The most paying options are *mulching EFB*, *harvesting ripe fruits* and *cover crops*. Our results are relevant for the promotion of more environmental friendly oil palm production in Thailand.

**Key words:** environmental impact, palm oil, oil palm, effectiveness, cost-effectiveness, Thailand

Download English Version:

<https://daneshyari.com/en/article/8100814>

Download Persian Version:

<https://daneshyari.com/article/8100814>

[Daneshyari.com](https://daneshyari.com)