

Water Footprint of Indonesian Palm Oil

Gan Lian Tiong¹ and Henry Cai¹

¹*PT Musim Mas, K.L. Yus Sudarso Km. 7.8, Tanjung Mulia, Medan, Indonesia*

ABSTRACT

This paper reports on the water footprint of palm oil production in nine plantations and ten mills located in Sumatera and Kalimantan islands of Indonesia. The water footprint is calculated using the model developed by Hoekstra in 2002. The amount of water consumed by oil palm from rain (Green water), from surface and ground water (Blue water) and the amount of freshwater that is required to assimilate the load of pollutants (Grey water) are calculated.

The result shows that the water footprint of the palm fruit (FFB) and the palm oil (CPO) are composed of predominantly green water with a very small blue water component. The grey water component varies from one plantation to another and is associated with the amount of fertilizers applied.

The results of this study are generally lower when compared to the results of other anecdotal studies in Indonesia, Malaysia and Thailand. Oil palm is mainly grown in the tropics with abundant rainfall and water resources and hence rarely practises irrigation, except in marginal oil palm area such as central Thailand which shows higher water footprint than Indonesia and Malaysia.

When compared to other major vegetable oil crops (soybean, rapeseed and sunflower) from anecdotal studies, the result of this study indicates that oil palm has the lowest water footprint. Sunflower is the highest followed by rapeseed and soy bean. Unlike oil palm, these temperate vegetable oil crops have sizable blue water footprints which reflect the more extensive use of irrigation in their production.

The difference in water footprint between different crops and different locations is due to the different conditions such as yield, agronomic inputs, and rainfall. This study also shows that evapotranspiration plays a pivotal role and can have significant impact on the water footprint. Locations with higher crop evapotranspiration value have higher water footprint.