

Figures

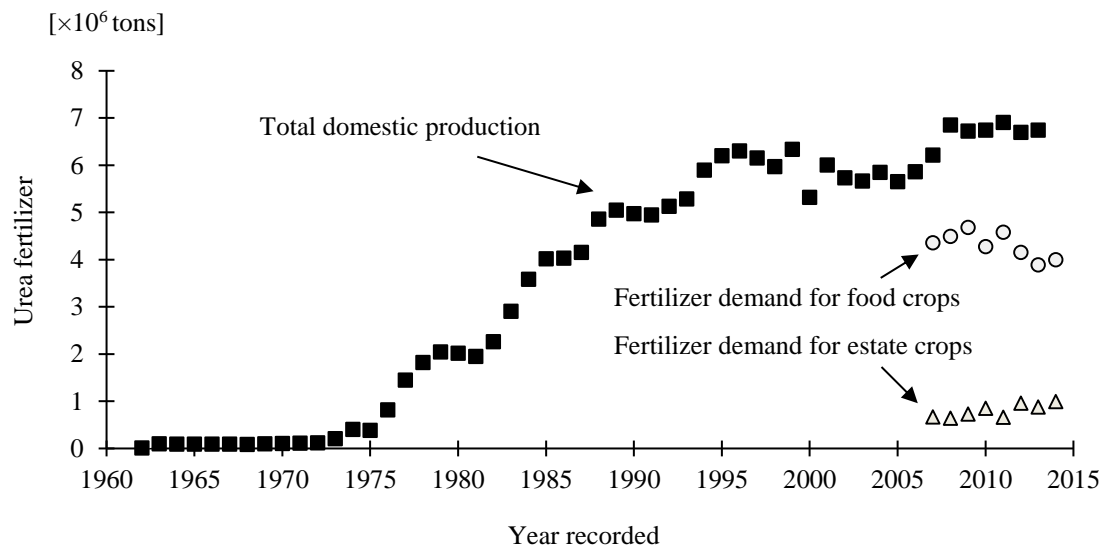


Fig. 1 - Urea fertilizer production and demand in Indonesia's data history from 1960 to 2015 [5]

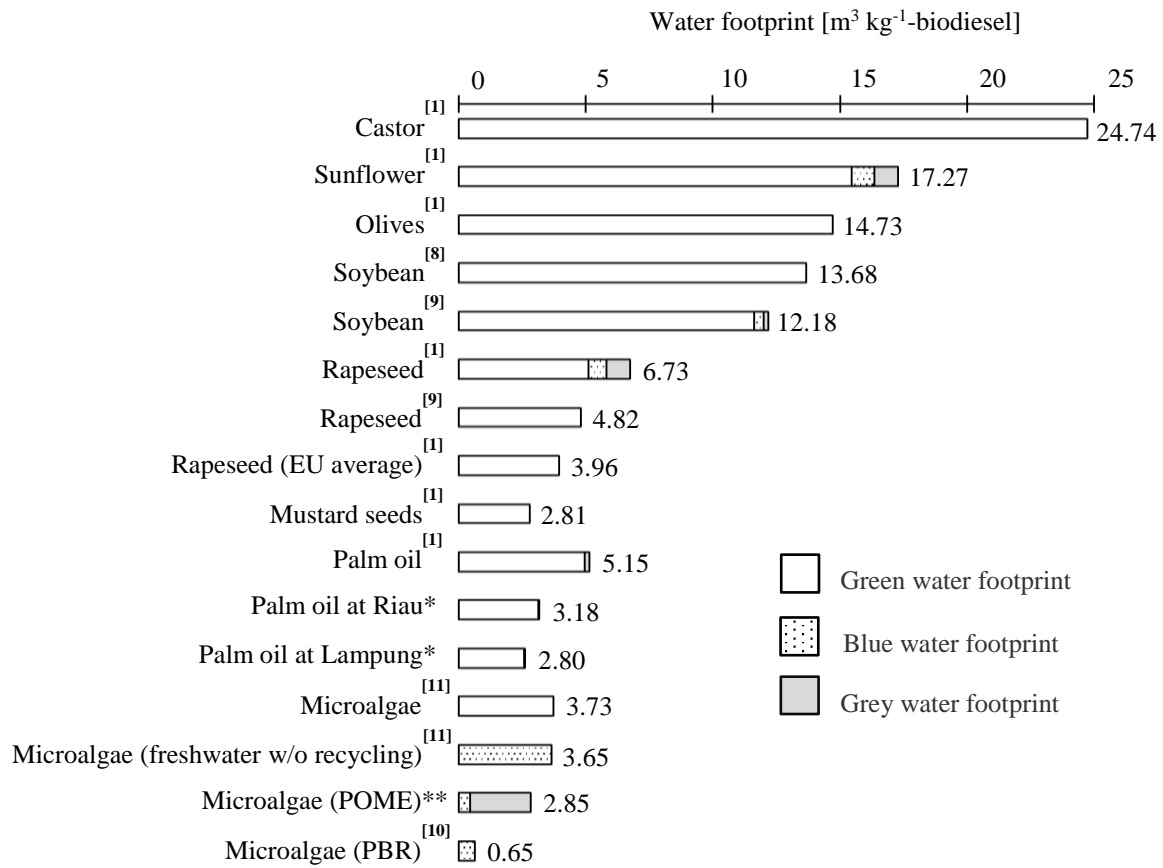


Fig. 2 - Comparison of the water footprint from selected biofuel crops

* Field measurement, Sumatra 2013

** Laboratory scale experiment 2013 -2014, water approximately 80% from Palm Oil Mill Effluent (POME)

Photo bio-reactor (PBR)

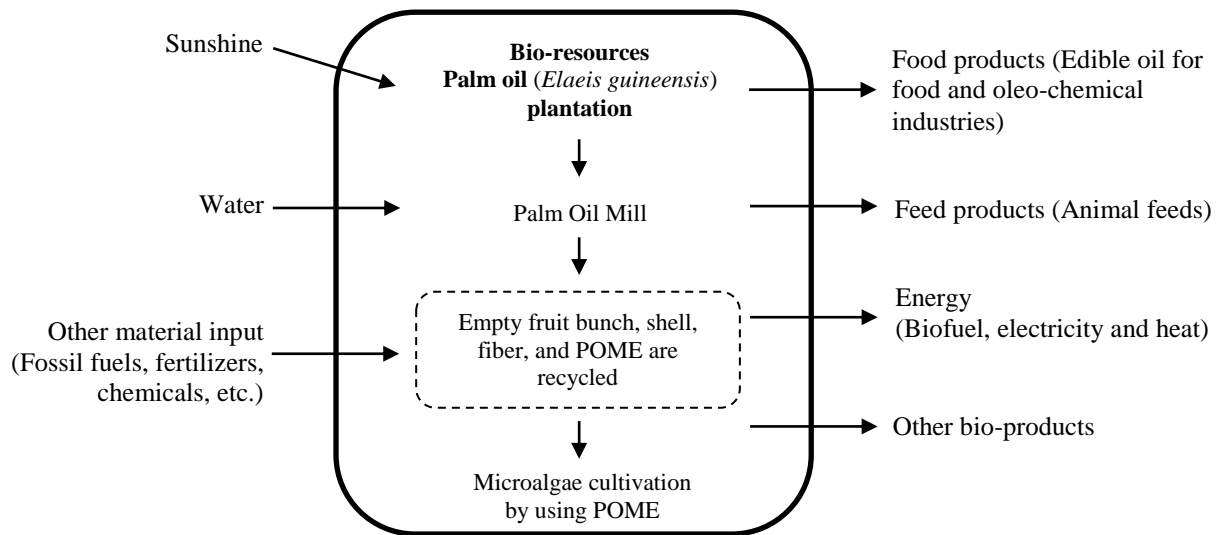


Fig. 3 - A conceptual scheme of the optimum bio-resources utilization in the palm oil plantation

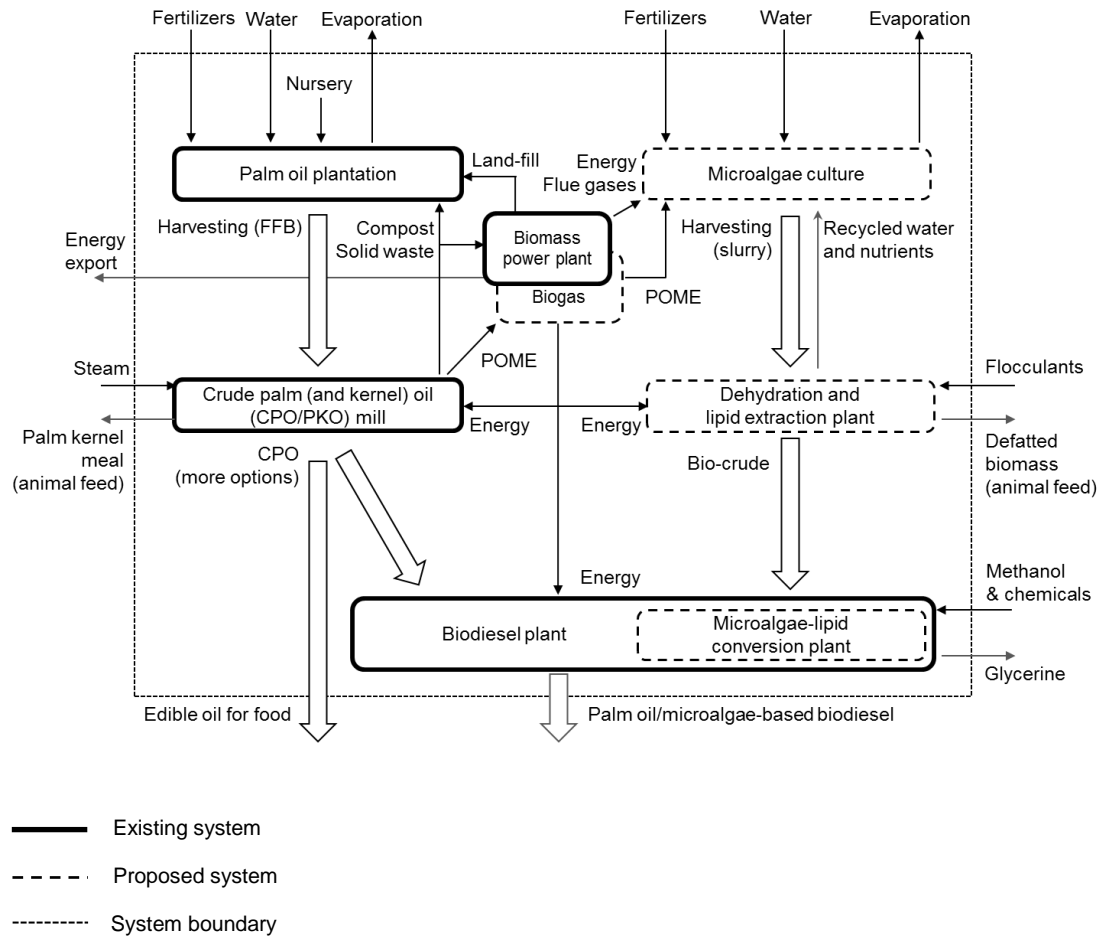


Fig. 4 - Life cycle framework for the proposed integrated palm oil- and microalgae-based biodiesel production system

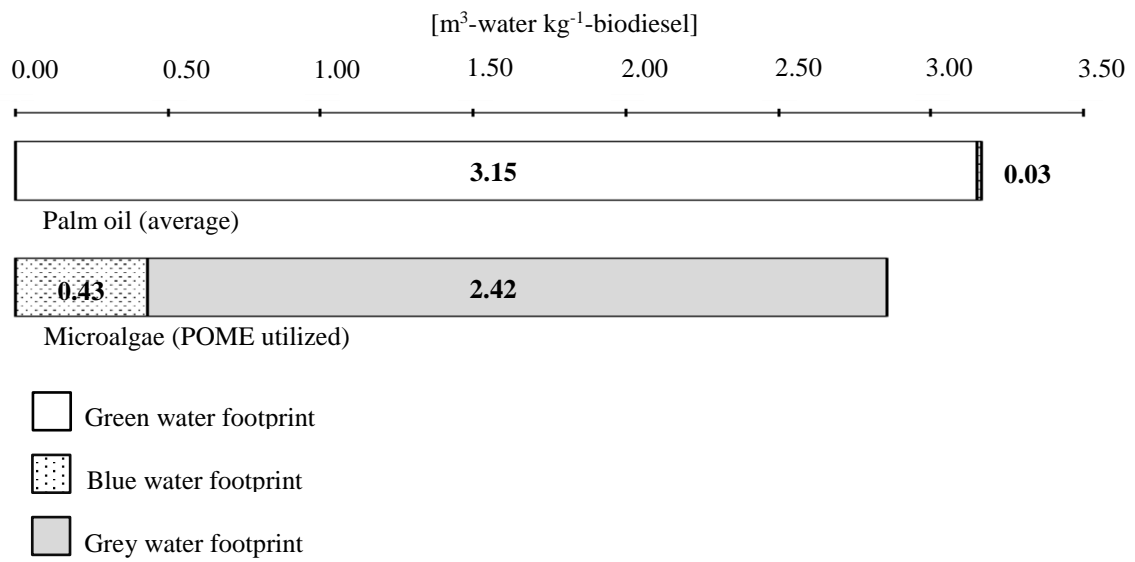
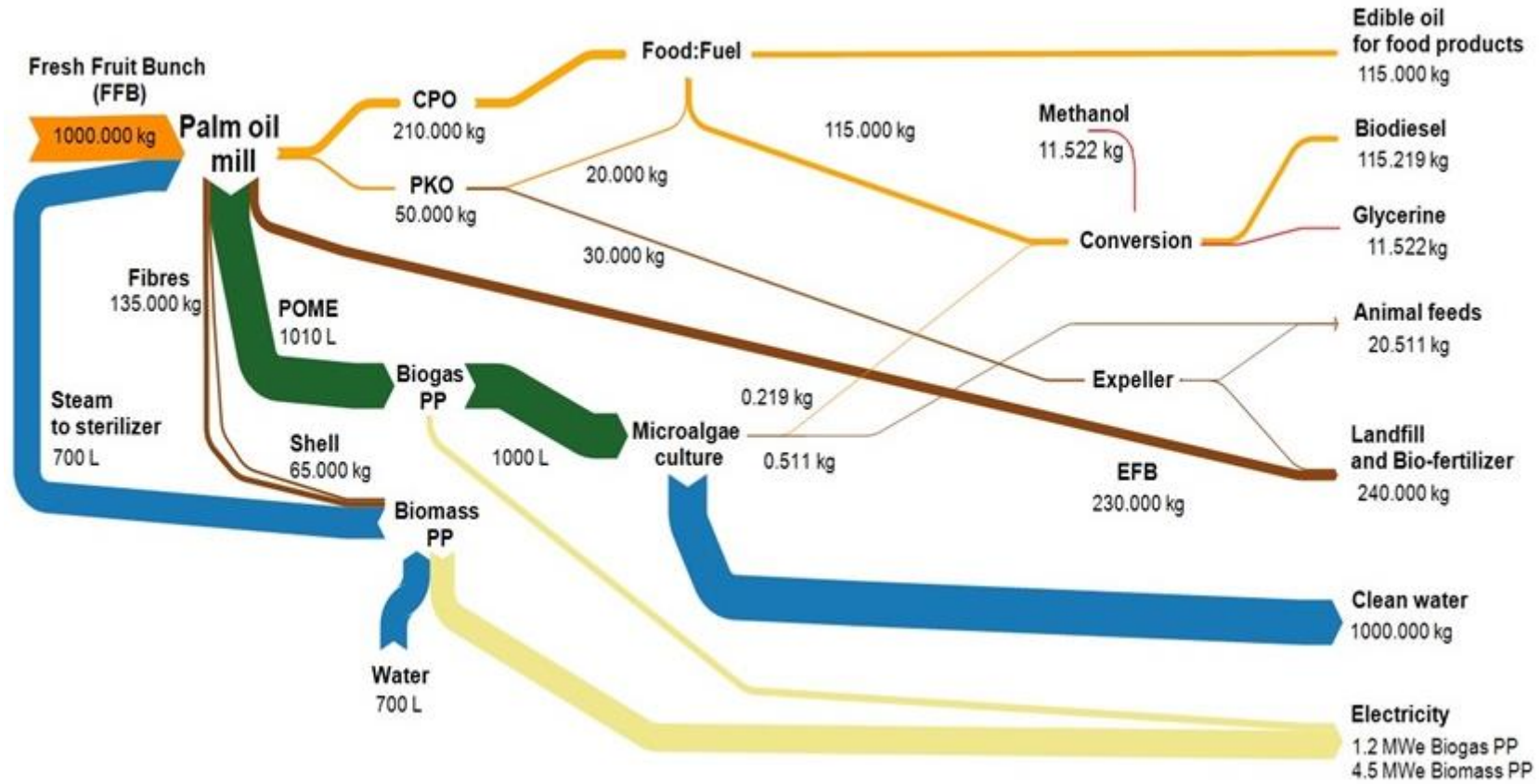


Fig. 5 - Evaluation of water footprints for palm oil- and microalgae-based biodiesel

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Fig. 6 - Mass balance and flow diagram of integrated bioenergy plantation

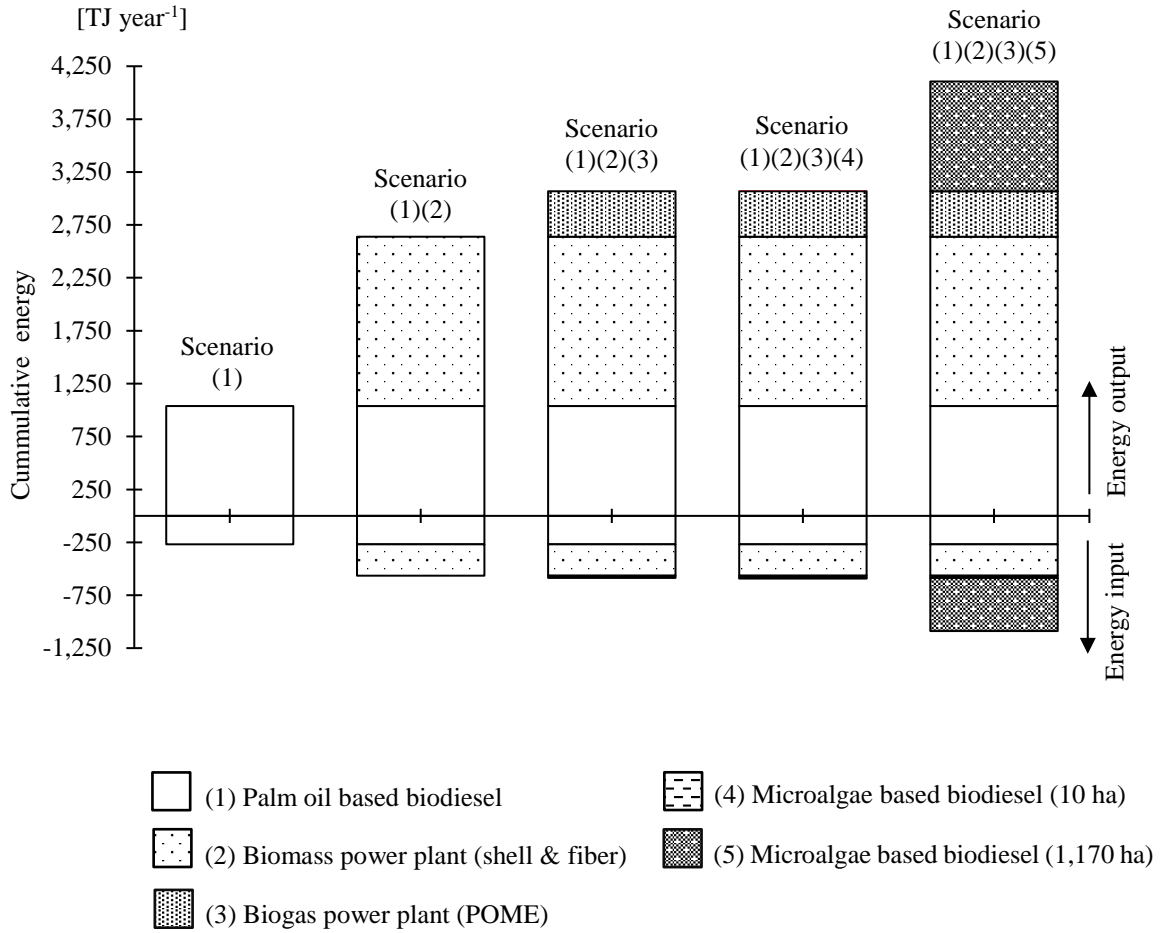
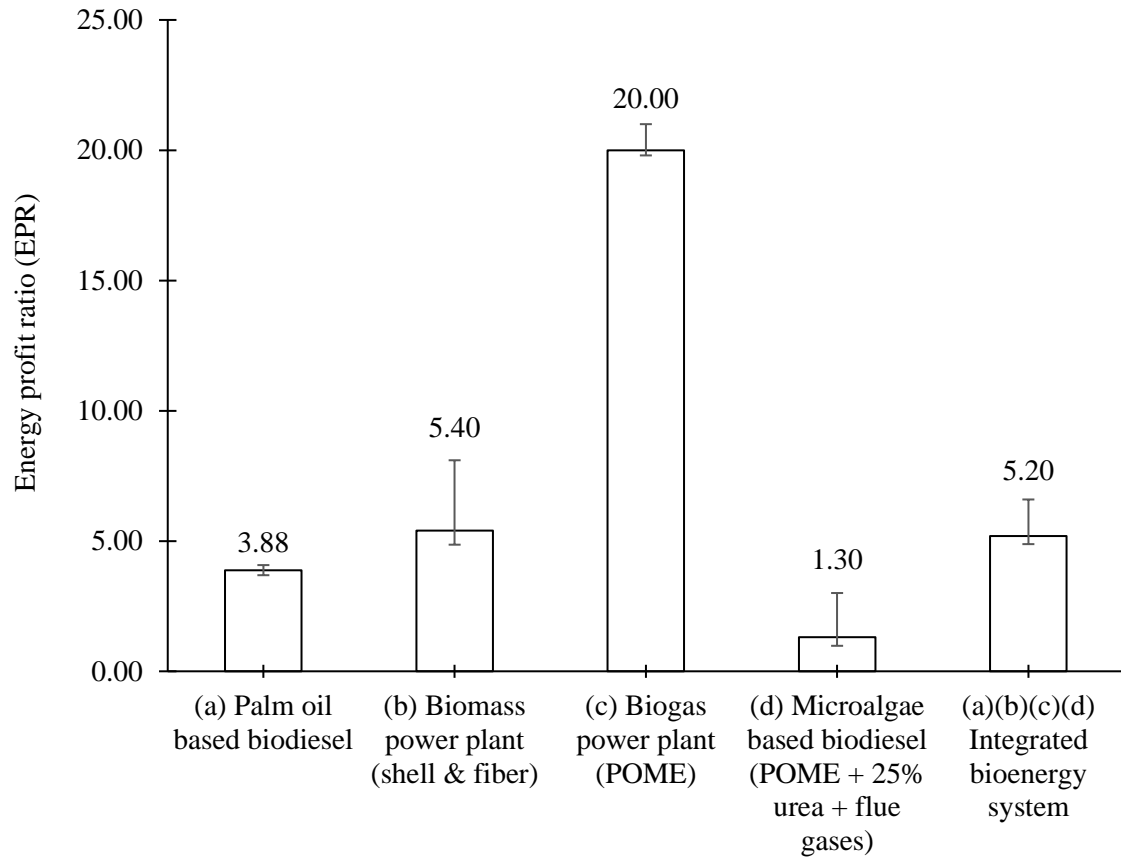


Fig. 7 - Energy input and output for integrated energy system by combination of proposed scenarios

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5 **Fig. 8** - Energy profit ratio (EPR) for each potential bioenergy sources inside the palm oil plantation

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