

Directors' Report – Carbon Reporting

Carbon Reporting

A greenhouse gas (“GHG”) emissions assessment quantifies greenhouse gases produced directly and indirectly from the Group’s agricultural activities. Also known as a carbon footprint, it is an essential tool in the process of understanding, monitoring, managing and reducing the Group’s climate change impact. The emissions sources included in this report were fuel and electricity consumption at the mills, palm oil mill effluent (“POME”) treatment, nitrogen emissions from mineral fertiliser use, company owned vehicle use, third party vehicle fuel use, electricity consumption in employee housing and emissions associated with land use change and carbon sequestration.

The report identifies and quantifies GHG emissions in the production of CPO at the Group’s mills and related estate supply base and planting activities. The Board believes that this report will help the Group plan and facilitate designs and implementation of effective strategies for reducing the Group’s GHG emissions in future as well as providing a benchmark to monitor reduction of similar gas. We understand the urgent need for the industry to identify and respond to reducing the environmental risk and impact by developing appropriate sustainable practices. We remain committed to monitoring, targeting and reducing all our environmental impact across the Group.

This assessment has been carried out in accordance with the World Business Council for Sustainable Development and World Resources Institute’s (WBCSD/WRI) Greenhouse Gas Protocol; a Corporate Accounting and Reporting Standard, together with the latest emission factors from recognised public sources including, but not limited to, Defra, the International Energy Agency, the US Energy Information Association, the US Environmental Protection Agency and the Intergovernmental panel on Climate Change. The values for the amount of carbon sequestered by the oil palm have been taken from the OPRODSIM and OPCABSIM average growth models provided in the PalmGHG Tool. GHG emissions have been reported by the three WBCSD/WRI scopes. Land use emissions and carbon sequestration results were calculated in line with the methodology used by The Roundtable for Sustainable Palm Oil (“RSPO”) GHG Working Group 2 throughout the PalmGHG Calculator. The carbon stock values were derived by the RSPO based on a review of relevant literature and satellite images for land use changes associated with oil palm plantations in Indonesia and Malaysia. An estimate of CO₂ emissions from cultivation of peat soils has been included in this report. The detailed methodology in calculation the GHG emissions under the three scopes can be viewed at www.ghgprotocol.org.

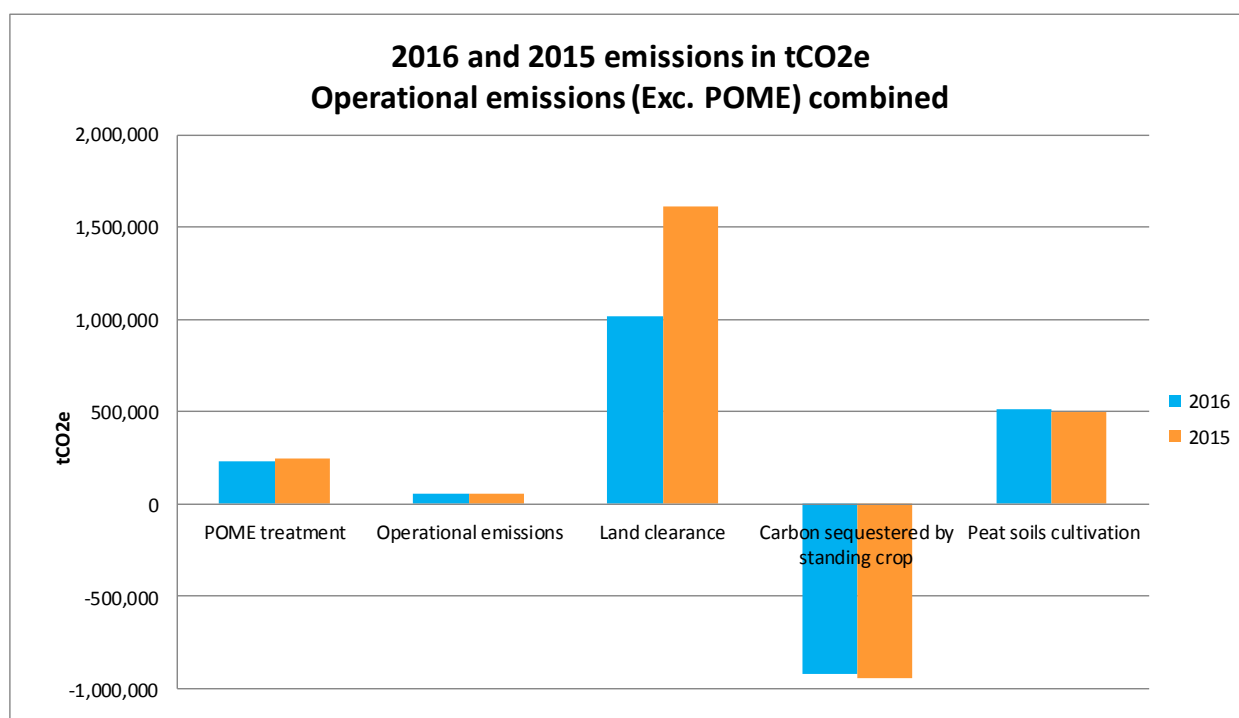
Cultivation of peat soils results in CO₂ emissions due to oxidation of organic carbon; therefore an estimate of these emissions from AEP’s peat soil estates has been included in this report. There is a lot of uncertainty regarding the determination of emission factors for peat cultivation and the methodology used in the PalmGHG Tool is based on a report by Hooijer et al (2010) which determines emissions based on the drainage depth of the soil.

The gross overall emissions computed by the outsourced agent were 903,684 tCO₂e for 2016 compared to 1,477,208 tCO₂e for 2015.

The overall emissions have decreased by 573,524 tCO₂e, or 39%, from 1,477,208 tCO₂e during the 2015 to 2016 assessment period. This decrease was mainly due to a decrease in emissions associated with land clearance.

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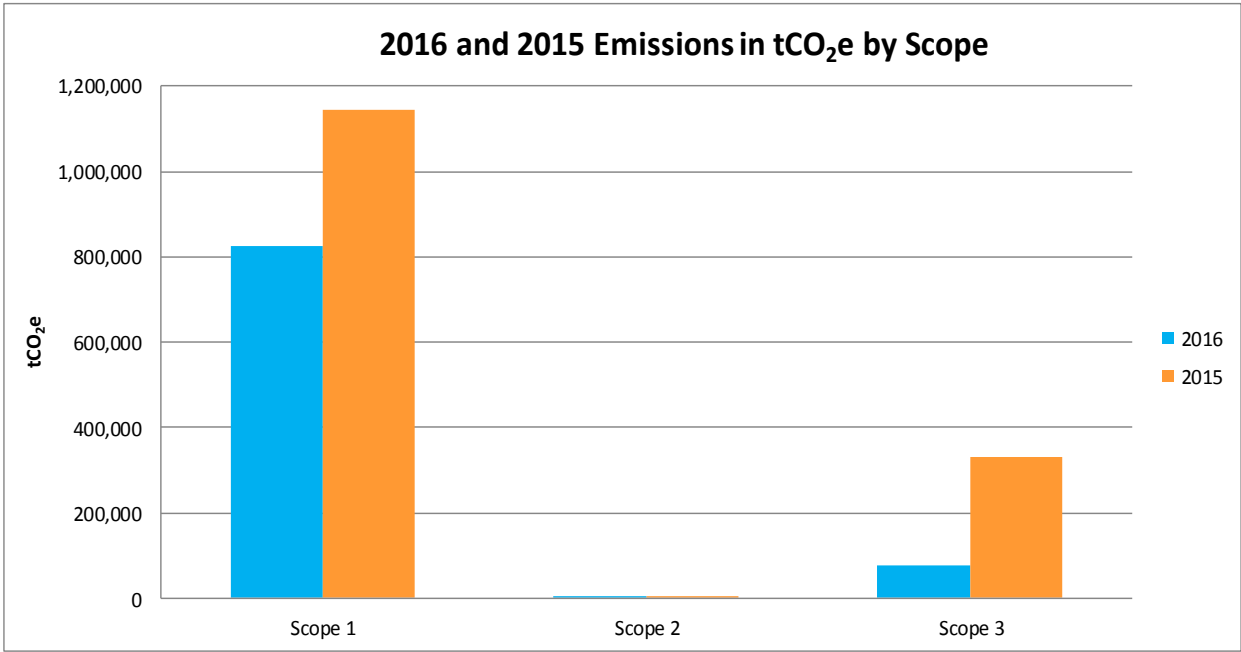
Emissions source	2016 Emissions in tCO ₂ e		2015 Emissions in tCO ₂ e	
POME treatment	235,069		249,327	
Fertiliser application	28,510		25,202	
Premises energy consumption	14,499		13,513	
Company owned vehicles	6,022		5,828	
Third party vehicle use	7,667		8,121	
Employee housing	1,581		1,123	
Total operational emissions	293,348		303,114	
	<i>Own crop</i>	<i>Out-grower crop</i>	<i>Own crop</i>	<i>Out-grower crop</i>
Land clearance	571,623	445,778	889,867	722,408
Carbon sequestered by standing crop	-518,184	-404,103	-519,175	-421,475
Peat soils cultivation	486,706	28,516	479,599	22,870
Total land use emissions	610,336		1,174,094	
Overall emissions	903,684		1,477,208	



The following chart display 2015 and 2016 overall emissions by scope.

Scope 1 are direct GHG emissions from sources owned and controlled by the Company which cover emissions associated with own crop land clearance, natural gas combustion and company owned vehicles. This made up majority of the GHG emissions. This has decreased in 2016 due primarily to decrease in land clearance emissions. Scope 2 accounts for GHG emissions of purchased electricity, heat and steam generated off-site. Scope 3 includes all other indirect emissions such as out-grower crop, waste disposal, business travel and staff commuting. The decrease in 2016 was due to the decrease in emissions associated with out-grower crop land clearance.

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Comparison of GHG emissions per production metrics:

Operational emissions reporting metric	2016 in tCO ₂ e	2015 in tCO ₂ e
GHG per tonne of CPO production	0.83	0.95
GHG per tonne of FFB production	0.33	0.34
GHG per tonne of FFB processed	0.17	0.20
GHG per hectare of planted area	4.43	4.72

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