RSPO | Roundtable on Sustainable Palm Oil

Correlating Economic and Financial Viability with Sustainability for Palm Oil Plantations

2015

RSPO

Roundtable on Sustainable Palm Oil

Acknowledgements

The author would like to thank the fourteen companies that participated in this project by completing questionnaires and putting time aside for face-to-face meetings.

The author is solely responsible for the final text and any errors of fact or interpretation therein.

The research and writing of this report was funded by the RSPO.

Correlating Economic and Financial Viability with Sustainability for Palm Oil Plantations (2015)
by Dr. Steffen Preusser

Executive Summary

A study was undertaken to examine which profitability indicators best correlate with sustainability for the palm oil industry. The 2013 and 2014 economic and operational data from 34 palm oil growers were collected using a combination of annual reports, questionnaires and face-to-face interviews. The surveyed group consisted of both Roundtable on Sustainable Palm Oil (RSPO) members and non-members in Indonesia and Malaysia (including Peninsular Malaysia, Sabah and Sarawak).

A palm oil grower's sustainability was measured as the proportion of their plantations that had been certified according to RSPO Principles and Criteria. Using this approach, the best indicator that correlated profit and sustainability was the average crude palm oil (CPO) selling price. In 2014, the average CPO price for growers with a minority of their plantations RSPO-certified (less than 20%) was RM 2,310 /mt, whereas the average CPO price for companies with a majority of their growing areas RSPO-certified (greater than 40%) was RM 2,468 /mt; representing an increase of RM 158 /mt. This difference was statistically significant based on a two tail t-test with different variances. The transition from the lower to the higher CPO selling price occurs between 20% and 40% of RSPO-certification.

While the average selling price of FFBs also showed a correlation with the degree of RSPO-certification, macro-indicators such as company revenue per hectare or profit (EBIT) per hectare showed no discernible correlation with sustainability. It was concluded that both a palm oil company's reported overall revenue and profit are more strongly influenced by other business activities than by their policies on sustainability.

An examination of operational parameters as a function of sustainability demonstrated that the FFB yield, oil extraction rate and net CPO yield per area were significantly larger for companies that had greater than 40% of their plantations RSPO-certified. For example, in 2014 the CPO yield companies with less than 20% RSPO certified plantations was 3.64 mt/ha, whereas for companies with greater than 40% RSPO certified growing areas was 4.92 mt/ha; an increase of 1.28 mt/ha or 35%. These differences were statistically significant based on the two tail t-test using different variances.

No similar correlations were observed between the average CPO price and several other company specific criteria such as, (1) the size of a company's downstream activities, (2) the overall land bank size or (3) the area of the mature plantations. This indicates that the average CPO price is statistically independent of these factors. Hence, the relationship between the average CPO price and the degree of RSPO-certification is unique and cannot be attributed to other factors.

Indonesia had weaker average CPO prices than Malaysia but only for companies with less than 20% of their plantations RSPO certified (minority certified). When the RSPO-Certification level was 40% or larger (majority certified), the average CPO prices from both countries converged to a uniform higher value. In other words, the discount for the CPO price in Indonesia relative to Malaysian producers is equalised for palm oil growers when they RSPO-certify more than 40% of their plantations.

To estimate the profitability of RSPO-certification on palm oil growers, the average revenue derived from the CPO production per hectare of plantation was utilised. In 2014,

companies with less than 20% of their plantations certified had an average revenue of RM 8,400 /ha whereas palm oil growers with more than 40% of RSPO certified growing areas had an average revenue of RM 12,100 /ha; representing a statistically significant increase of RM 3,700 /ha (or 45%). Note that this value only considers the revenue due to CPO production, other products, such as palm kernel oil, are not included.

When the increased CPO revenue is compared to the median cost for certifying a hectare of plantation, RM 25, a RSPO-certification leveraged revenue of 150 is calculated. To put it another way, every Ringgit invested in complying with RSPO-based sustainability generated, on average, an additional RM 150 in CPO revenue in 2014.

Table of Contents

List of Figures

List of Tables

Commonly Used Abbreviations in this Study

ACOP	RSPO's Annual Communication of Progress for members
CL 90%	Confidence Level of 90%
CPO	Crude Palm Oil
CSPO	Certified Sustainable Palm Oil
EBIT	Earnings Before Interest and Taxes
FFB	Fresh Fruit Bunches
Majority Certified	Companies with more than 40% of their growing areas RSPO-certified certified
Minority Certified	Companies with less than 20% of their growing areas RSPO-certified certified
MPOB	Malaysian Palm Oil Board
NGO	Non-governmental Organisation
p.a.	Per annum
RM	Malaysian Ringgit
ROI	Return on Investment
SPOTT	Sustainable Palm Oil Transparency Toolkit
RSPO	Roundtable on Sustainable Palm Oil

1.0 Introduction / Project Objectives

Sustainable palm oil production has been the objective of the Roundtable on Sustainable Palm (RSPO)[i] since its inception in 2004. Once palm oil companies began to certify their plantations according to RSPO standards, they anticipated generating significant premiums as a result of their efforts. The measure of this new profit source was based on the trading value of GreenPalm certificates (a sustainable palm oil certificate-trading programme).

This did not develop as planned. GreenPalm certificates commenced trading in January 2010 and had an initial value of US$ 9.35. As of October 2015, GreenPalm certificates were trading at about US$ 0.80 per metric ton of certified palm oil.[ii] Based on the development of the GreenPalm certificate prices, it is easy to see why many in the palm oil industry do not recognize any profitability in RSPO-Certification and now consider it an expensive burden.

The present study was undertaken to examine other indicators of profitability for Malaysian and Indonesian palm oil from certified plantations for the years 2013 and 2014. By comparing different economic and operational indicators from palm oil companies, it would be possible to identify and quantify which indicators best correlate to a company's sustainability ranking. To ensure that the study did not use any confidential company data, only data already available in the public domain was used: typically found in annual reports. In addition to the data from the annual reports, questionnaires were also sent to the companies to ratify and complement the annual report data. For selected companies that returned completed questionnaires, face-to-face interviews were used to gain more in-depth information.

In summary, the objectives of the study are:

- To identify and quantify key economic and operational indicators that will demonstrate the relative profitability of RSPO-certified plantations.
- Compare select economic factors before and after certification for RSPO Oil Palm Growers, to determine how profitability increased as a result of certification.
- Compare the typical investment of an Oil Palm Grower to certify a plantation to the typical increase in returns anticipated for certification to calculate a value for the added revenue that was leveraged through RSPO-certification.

[i] www.rspo.org/about
[ii] greenpalm.org/the-market/market-overview/market-volume-and-price-charts

2.0 Methodology

When measuring profitability for a palm oil company, the concept can be divided into two distinct parameters: a revenue and an operational portion (see Figure 1). The revenue portion is determined by the sale of fresh fruit bunches (FFBs) or by the sale of crude palm oil (CPO): CPO is the next step on the value chain. All of the plantations surveyed in this study own oil mills in close proximity to their plantations and, as a result, have the ability to process their harvested FFBs into CPO in a single business unit.

In addition to the FFB and CPO prices, it is also possible to use the revenue of the plantation business unit or the plantation business unit profit (EBIT) as a measure of profitability. The audited values for a company's revenue and profit can be found in their respective annual reports. The revenue and profit (EBIT) are normalized with the size of the company's palm oil growing area to allow for comparisons between companies with differently sized plantations.

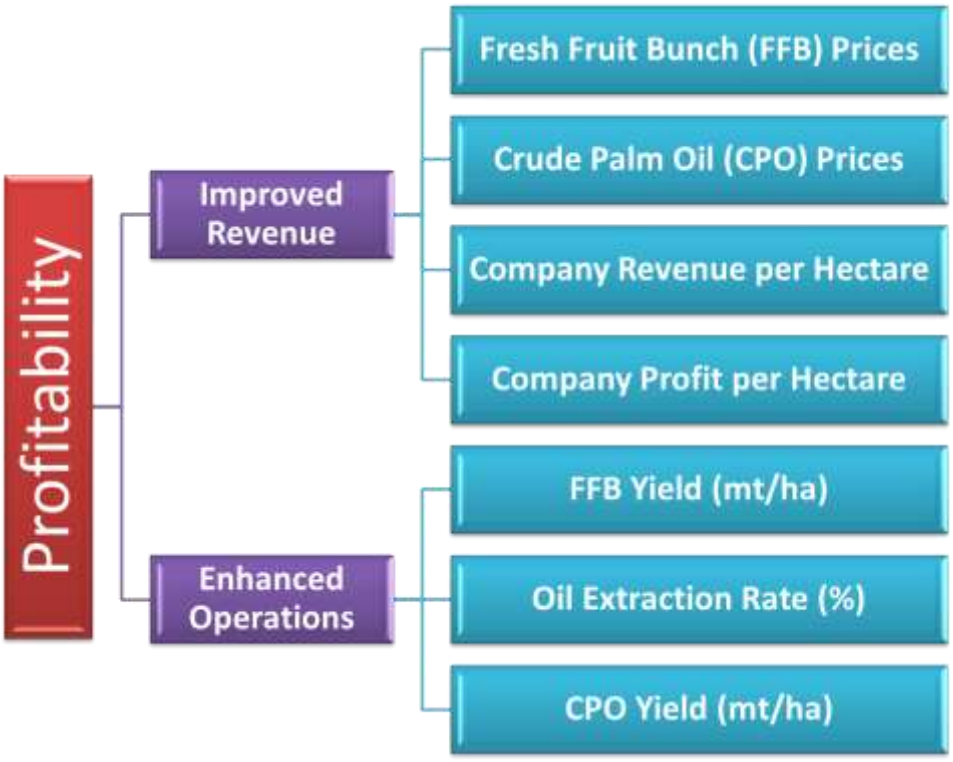

Figure 1 Profitability Parameters for Palm Oil Growers

The operational component for a palm oil company is also important when measuring profitability. This would include parameters such as the FFB yield, the oil extraction rate (OER) and the CPO yield. Any changes in these values will increase profitability even if the selling prices remained the same. It should be noted that these three parameters are mathematically related:

$$CPO\ Yield\ \left(\frac{mt}{ha}\right) = FFB\ Yield\ \left(\frac{mt}{ha}\right) \times Oil\ Extraction\ Rate$$

The questionnaire sent out to the participants incorporated questions on all the above variables (see Appendix 1). The questionnaire also included questions about the costs of RSPO-Certification and which other certification schemes the palm oil companies are using.

The questionnaires were sent out to the companies listed in Appendix 2.

In addition to the questionnaire, two further sources of information were use:

- The companies' 2013 and 2014 annual reports (for publicly listed companies). See Appendix 2 for a complete list of websites for each of the companies used in this study.
- The companies' "Annual Communications of Progress" (ACOP). These reports are completed by the RSPO palm oil growers according to a template supplied by RSPO. The reports are publically available; see www.rspo.org/members/acop

The data was entered in an EXCEL table that allowed for comparisons between the different sources. At this point, missing information in one source could be complemented by information from the other sources as described above. Data could be cross-checked and anomalies identified. Once the data sets were as complete as possible, all currency entries were converted to Malaysian Ringgits (RM). The average yearly exchange rates for 2013 and 2014 between the Ringgit and the Indonesian Rupee, the Euro, and the US dollar were calculated using the data from www.x-rates.com.

At this point, data was assembled in unique EXCEL tabs to compare and test the different combinations. As many of the data sets were incomplete, the individual comparisons often used less than the total 34 data sets available (typically 30 data sets were used). When averages were calculated in this study, the number of data sets that were used for the calculation is stated in the respective table of results.

A suitable sustainability index was identified that permitted a finely graduated scaling of this parameter (see Section 4.1).

Once a trend was observed for 2014, the same data for 2013 was prepared to see if the trend already existed in the previous year. In this way, anomalous or spurious trends could be identified and rejected. To calculate averages, data was grouped so that the largest number of data sets could be used to reduce the measurement error. Errors were quoted with a confidence level of 90% and were calculated using the standard deviation and the t-value for N-1 degrees of freedom. To determine if the grouped averages varied significantly, the raw data was subjected to EXCEL's t-test using the two-tail test with unequal sample sizes and unequal variances. Significance was determined by comparing the "t stat" value to the "t critical two tail" value.[iii]

Once a trend was identified and confirmed for a profitability indicator, the profitability indicator was rigorously tested against a number of other influencing indicators to establish whether the trend with sustainability was unique. Only by establishing a unique relationship between a profitability indicator and the sustainability index, was it possible to formulate robust and statically relevant conclusions.

[iii] See www.excel-easy.com/examples/t-test.html

Finally, interviews with some of the companies were carried out to ask in-depth questions about the data they submitted and to assess their impressions on the findings made in this study. This feedback was important in identifying any possible misinterpretations of the data or the conclusions drawn from the data.

3.0 The Database

To ensure that the company database for the study was sufficiently diverse for the different tests to be carried out, an analysis was carried out on the database itself. This analysis looked at the source of data for the study, the size of the companies, the countries of operation of the companies and the size of their downstream (or refining) operations. Note that all data used for these analyses is from 2014.

Table 1 Sources for the Data

	Number	Percentage
Annual Reports	20	59%
Questionnaires	14	41%
Total	**34**	**100%**

The main source of the data was from the company Annual Reports (59%). In total, 14 completed questionnaires were returned; 13 from RSPO members and one from a non-member. Many of the Annual Reports contained the information that was requested in the questionnaire.

Table 2 Number of RSPO Members

	Number	Percentage
RSPO Member	21	62%
Non-member	13	38%
Total	**34**	**100%**

Sixty percent of the companies included in the study were RSPO members, with the remainder being non-members.

Table 3 Country Distribution of Plantations

	Number	Percentage
Only Malaysia	8	24%
Only Indonesia	13	39%
Malaysia & Indonesia	12	36%
Total	**33**[iv]	**100%**

Of the 34 palm oil companies surveyed, eight companies operated only in Malaysia, thirteen companies operated only in Indonesia, while twelve others operated in both Malaysia and Indonesia. Of the companies operating in Malaysia (20), 15 have plantations in Sabah or Sarawak (East Malaysia). A few companies also had holdings in Papua New Guinea and others had holdings in various African countries. There was

[iv] One company only has a presence in Papua New Guinea and was not included in this table.

insufficient data from the Papua New Guinea operations to carry out a comparative analysis. Virtually all the African plantations were in the planting or immature stage and, hence, no data was available for them.

The plantation land bank of all the companies surveyed totals 4,580,000 hectares globally. The companies can be grouped into the following sizes.

Table 4 Land Bank Distribution of Plantations Surveyed

	Number	Percentage
0 - 25,000 ha	1	3%
25,001 – 50,000 ha	12	35%
50,001 – 100,000 ha	8	24%
100,001 – 200,000 ha	6	18%
200,001 ha and greater	7	21%
Total	**34**	**100%**

Based on the above table, it can be concluded that the dataset incorporates a broad distribution of plantation sizes (independent of being RSPO-members).

Table 5 compares the distribution of the location of the plantations of the surveyed companies with industry data from 2014. The companies surveyed for this project encompassed 4,040,000 hectares of plantations in Malaysia and Indonesia. This represents circa 27% of the total planted areas in these countries in 2014. The relative percentage of the regions represented in the survey closely reflects the actual percentage of the distribution of palm oil estates.

Table 5 Comparison of Surveyed Land Bank Distribution with 2014 Data

	2014 Data[v]		Surveyed Companies		
Location	**Area (ha)**	**%**	**Area (ha)**	**%**	**Δ**
Indonesia	9,800,000	65	2,453,000	61	-4%
Peninsular Malaysia	2,617,334	17	702,500	17	0%
East Malaysia – Sabah	1,511,510	10	473,700	12	+2%
East Malaysia – Sarawak	1,263,391	8	410,800	10	+2%
Total	**15,192,235**	**100%**	**4,040,000**	**100%**	

Table 6 examines the distribution of the percentage of RSPO-certified plantations for both RSPO members and non-members in the study[vi]. The majority of the data is split between 0% and the 51-100% range.

[v] See Malaysian Palm Oil Board data (http://bepi.mpob.gov.my/index.php/statistics/area/132-area-2014/713-oil-palm-planted-area-dec-2014.html), Indonesia Investments (www.indonesia-investments.com/business/commodities/palm-oil/item166) and the Mundi Index (www.indexmundi.com/agriculture/?commodity=palm-oil&graph=production).

[vi] Non-members were assigned a 0% RSPO-certification.

Table 6 Degree of RSPO-Certification of Plantations

	Number	
0%	15	44%
1-25%	4	12%
26-50%	2	6%
51-75%	4	12%
76-100%	9	26%
Total	**34**	**100%**

Fifteen of the companies owned and operated a downstream refinery to upgrade crude palm oil to consumer products such as refined bleached and deodorized palm oil, frying oils or baking fats.

Table 7 Distribution of Refining Capacities

	Number	
0 mt/annum	18	53%
Up to 1,000,000 mt/annum	8	24%
More than 1,000,000 mt/annum	8	24%
Total	**34**	**100%**

4.0 Data Analysis

4.1 Selection of Criteria to Measure the Level of Sustainable Practices by Palm Oil Growers

Prior to examining the indicators for profitability, it was necessary to determine what would be the most applicable criteria for measuring sustainability. Only by having a reliable scale for sustainability, will it be possible to test the different indicators for profitability. The following approaches were examined.

Figure 2 Determining a Suitable Sustainability Index (for 2014 Analysis)

1. One approach to measure sustainability is to divide the palm oil growers into RSPO members and non-members. This assumes that RSPO members have certified a majority of their plantations according to RSPO principles. Unfortunately, this is not always the case. A number of RSPO members that were included in this study had not certified any significant amount of their plantations. The implication of this approach is that by simply being a member of RSPO, a grower could be classified as sustainable, even if none of their plantations had been certified to RSPO standards. Hence, this criterion for sustainability was rejected as not representative.

2. Another approach to measure sustainability is to use the degree plantations have been RSPO certified. The advantage of this approach is that it is more nuanced than a "yes/no" sustainable versus non-sustainable distinction. In addition, RSPO-Certification is based on plantations meeting RSPO's "Principles and Criteria"[vii]; hence RSPO certifications are already a measure of environmental, social and economic practices related to sustainability. So

[vii] www.rspo.org/resources/key-documents/certification/rspo-principles-and-criteria

the percentage of certified plantations is an accurate reflection of the adoption of sustainable practices by the palm oil growers.
Since part of the RSPO reporting mechanism for growers is submitting an "Annual Communications of Progress" (ACOP),[viii] which includes reporting the percentage of certified plantation areas, a public source of this data is readily available.

3. Another measurement for sustainability has been developed by the London Zoological Society: the **Sustainable Palm Oil Transparency Toolkit (**SPOTT).[ix] It is largely based on the RSPO ACOP reports. The following points illustrate some of SPOTT's shortcomings (for the 2014 rankings):

    - Although the SPOTT evaluation covers a considerable breadth of different sustainability indicators, each of the indicators have roughly the same weighting on the final result meaning the indicators are not ranked according to importance or effectiveness. For example, the first four SPOTT indicators are relatively trivial with questions such as "Are they an RSPO member?" or "Do they mention all the countries they operate in?" These four questions are equivalent in points to question 1.5 (4 points) which covers the percent of estates that are RSPO certified. Objectively, the latter question should have a much higher weighting because it measures actions not just formalities. In fact, certification related scoring accounts for only 16 of the 55 points.

    - A large part of the scoring (circa 18 of 55 points) is based on the company's public statements on various topics of sustainability. There is a danger that a company with an active public relations group could score higher than a company with a weaker public relations group, despite both having equivalent policies on sustainability in place.

    - The SPOTT scoring card was only available for 15 companies in 2014 which is insufficient for this study.

A plot of the SPOTT scores as a function of the percentage of RSPO-Certification is shown in Figure 3.[x] The relationship is roughly linear which demonstrates that a correlation exists between the different approaches.

[viii] www.rspo.org/members/acop
[ix] www.sustainablepalmoil.org/spott/ (The SPOTT data was retrieved on January 17, 2015 and reflects their rankings based on 2014 data. This corresponds to same time period used in this study.)
[x] Note: the percentages referred to in the different axes are based on different criteria; *i.e.*, a SPOTT Score of 0% does not imply 0% RSPO-Certification.

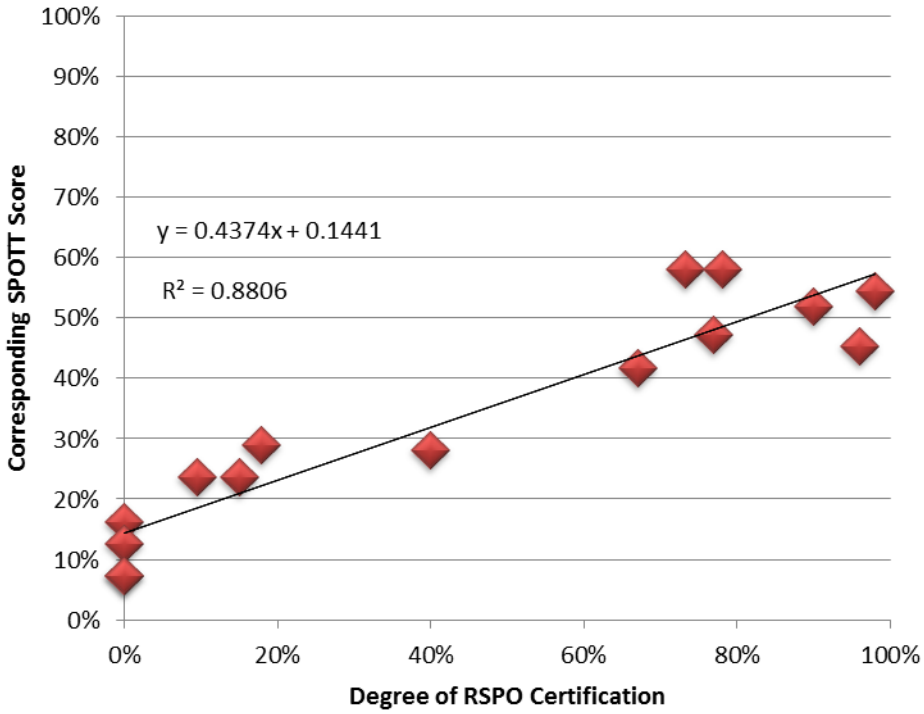

Figure 3 SPOTT Score as a Function of RSPO-Certification (2014 data)[xi]

In conclusion, it was decided that the optimum indicator for sustainability is the degree of RSPO-Certification of the planting areas (expressed as a percentage). The SPOTT score was not used in this study except for comparison purposes in one analysis.

4.2 Examination of Revenue Indicators

As discussed in the Methodology, profitability for palm oil growers has both revenue and an operational component. This section looks at the revenue sources.

The two revenue indicators which are directly related to the saleable products from palm oil plantations are the prices for fresh fruit bunches (FFBs) and the prices for crude palm oil (CPO) (Figure 1). Since all the palm oil growers that were included in this study have the ability to process FFBs to CPO in oil mills and sell CPO, the database has 30 data sets that include information on the average price of CPO. In contrast, the sale of FFBs by plantations to outside mills occurs only under certain conditions. As a result, the database has only 12 data sets that include information on the average price of FFBs. Hence, it was decided to present the analyses using the average CPO prices first.

[xi] The data set includes 15 points; two of the data points are identical.

Average CPO Prices

Figure 4 displays all the available data sets that correlate the average CPO price as a function of the degree of RSPO-certification for 2014. The data, as it is presented here, is difficult to interpret. To simplify the analysis, the 30 data sets were grouped according to five ranges of RSPO-Certification; 0%, 1-25%, 26-50%, 51-75% and 76-100%. The data in each group was then averaged and plotted in bar chart (see Figure 5). Two levels of prices are immediately visible; those for plantations with less than 25% RSPO-certification and those with for plantations with greater than 25% RSPO-certification. Based on this observation, the data in Figure 4 was re-examined. The data sets were then grouped into two clusters: one less than 20% and one greater than 40% RSPO-certified. For the transition range between 20% and 40% there were no available data sets. In other words, the transition of 25% identified in Figure 5 is more accurately described as a transition range. A similar analysis of the 2013 data (see Figure 6) yielded identical results.

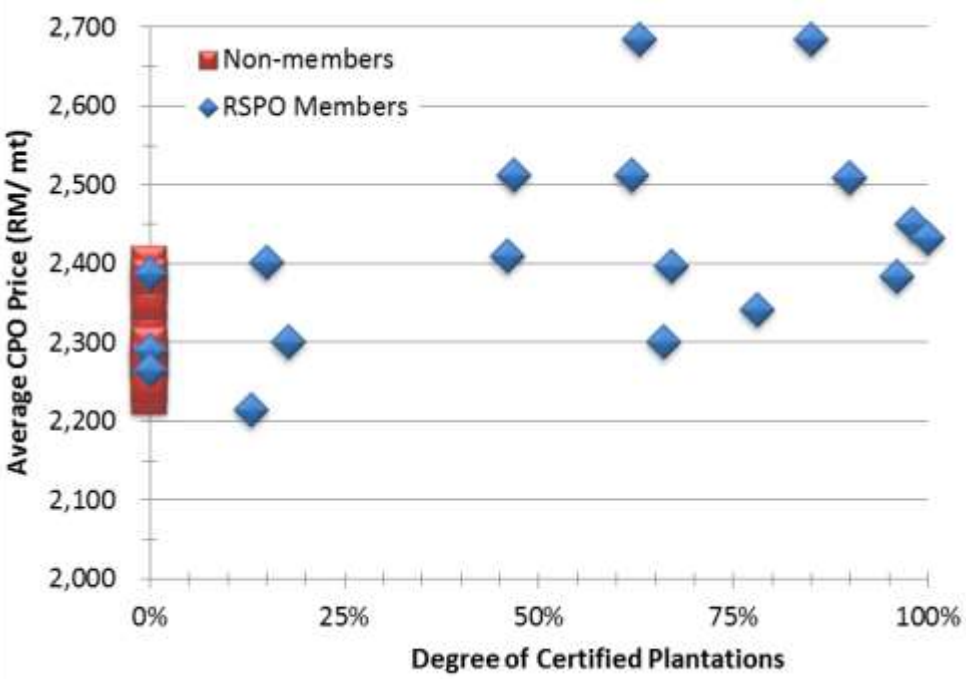

Figure 4 Average CPO Price as a Function of Degree of RSPO-Certification (2014)

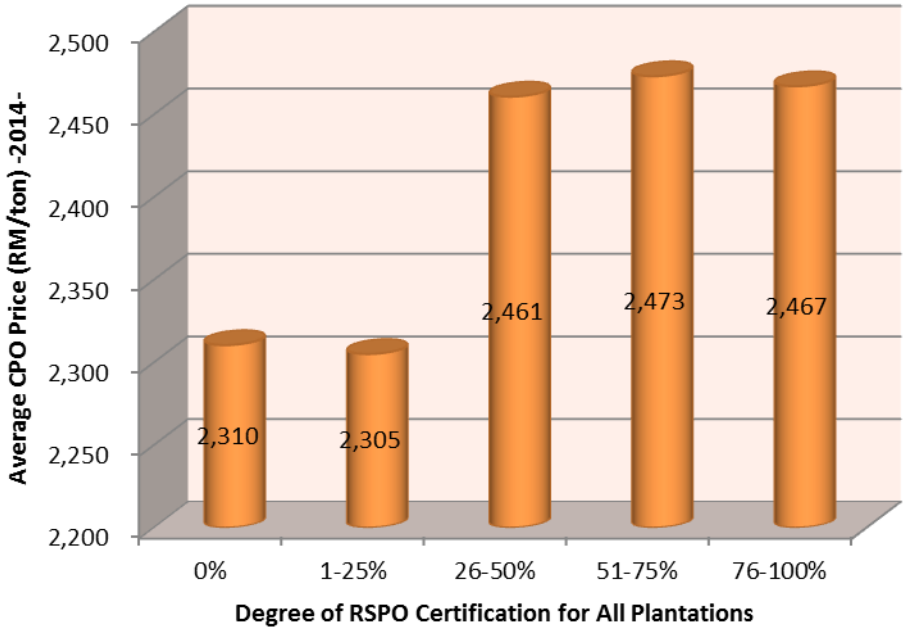

Figure 5 Average CPO Price as a Function of the Degree of RSPO-Certification (2014): Displayed as a bar graph

Figure 6 Average CPO Price as a Function of the Degree of RSPO-Certification (2013)

The increase in profitability between 20% and 40% certification can be understood in terms of a business putting a new policy into operation. Plantation companies at the beginning of the certification process are testing approaches of converting the sustainability principles and criteria into practice. At first only a few isolated plantations are certified but the policy has not taken hold in all parts of the company's operations. As the sustainability procedures are refined and introduced throughout the company, a tipping point is reached within the

transition range, where the policy becomes operationalized company-wide. For the present results, it can be inferred that below 20% certification, critical mass has not been reached for the adoption of sustainable practices, whereas above 40% RSPO-certification, the new procedures have been adopted in most of the company. Even if the RSPO-certification is not at 100%, it is only a matter of time for the certification process to be completed. For this reason, the region below 20% RSPO-certification will be referred to as **Minority Certified** and the range above 40% RSPO-certification is referred to as **Majority Certified**.

Based on the above observation, the average CPO prices were re-sorted into two groups: minority and majority RSPO-certification. The results are summarised in Table 8.

Table 8 Average CPO Prices as a Function of Degree of RSPO-Certification for 2013 & 2014

	Degree of RSPO-Certification	Average CPO Price (RM/mt)	Error (CL 90%) (RM/mt)	Change (RM/mt)	Data[xii]
2014	Minority	2,310	± 24		18
	Majority	2,468	± 63	+158	12
2013	Minority	2,252	± 33		18
	Majority	2,463	± 74	+211	12

Table 8 includes the error on each of the averages based on a confidence level of 90% (CL 90%).[xiii] The table also reports the average increase in CPO price between minority and majority RSPO-certification.

For the results to have validity, the respective averages for minority RSPO-certification and majority RSPO-certification must be significantly different based on a two-tail t-test (as described in the methodology). The results for the t-tests on the 2013 and the 2014 Average CPO Prices confirmed that the respective minority RSPO-certified and the majority RSPO-certified results are significantly different.

Hence, the average CPO price is a valid indicator for measuring the differences in revenue as a function of RSPO-certification.

For comparison purposes, the average CPO prices were also graphed as a function of the SPOTT Score in Figure 7. It can be observed that the average CPO price increases with the SPOTT score. Since the SPOTT score is a combination of certification, company policy and formalities (such as RSPO membership), it is difficult to attribute the CPO price increase to any single factor.

[xii] The number of data sets used varies because not all data sets had the necessary information to do the analysis in question.
[xiii] Using the t-value for N-1 degrees of freedom.

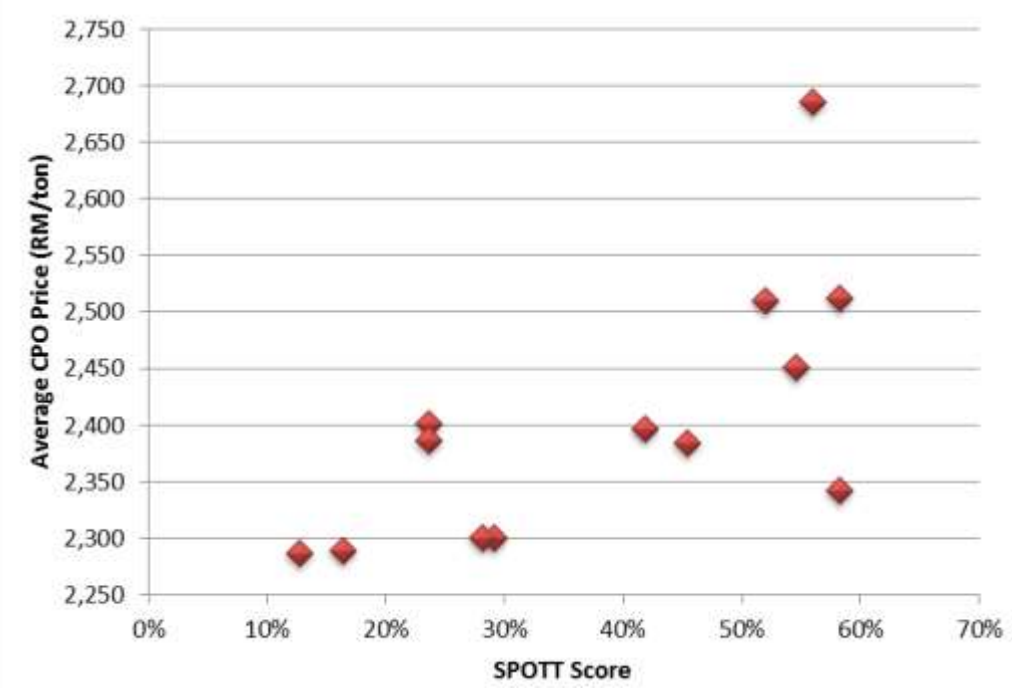

Figure 7 Average CPO Price as a Function of the SPOTT Score (2014)

Average FFB Prices

When the average FFB prices are analysed based on the same criteria (for minority and majority RSPO-certifications), increases in the FFB price are also observed (see Table 9).

Table 9 FFB Prices as a Function of Degree of RSPO-Certification for 2013 & 2014

	Degree of RSPO-Certification	Average FFB Price (RM/mt)	Std. Dev. (CL 90%) (RM/mt)	Change	Data[xiv]
2014	Minority	444	± 30		7
	Majority	488	± 27	+ 44	5
2013	Minority	415	± 45		7
	Majority	466	± 25	+ 51	6

Unfortunately the two tail t-tests for the 2013 and 2014 average FFB price indicated that their respective minority and majority RSPO-certification averages were not significantly different; the reason for this is the high variability of the data coupled with the low number of data sets.

Hence, a trend to higher FFB prices for RSPO-certified plantations was observed but, due to the lack of sufficient data points, the difference is not statistically significant.

[xiv] The number of data sets used varies because not all data sets had the necessary information to do the analysis in question.

Company Revenue and Company Profit

For the analyses involving the company's revenue and the company's profit, the company data was normalized to the area of the company's mature crop area. This permitted a standardized comparison between companies with different plantation sizes.

The company revenue per mature plantation area for the plantation units are shown in Figure 8. The company profit (EBIT) per mature plantation area for the plantation units are graphed in Figure 9. No obvious trend was observed in either case.

This lack of correlation can be attributed to the way plantation revenue and plantation profit (EBIT) are calculated. A company's revenue is usually calculated from all sources, many of which are not dependent on "sustainable palm oil policies". This would include sales of land, income from foreign exchange dealings or revenue from downstream operations. The calculation of the company's profit is even further removed from "sustainable palm oil policies" because it includes items such as wages and capital expenditures.

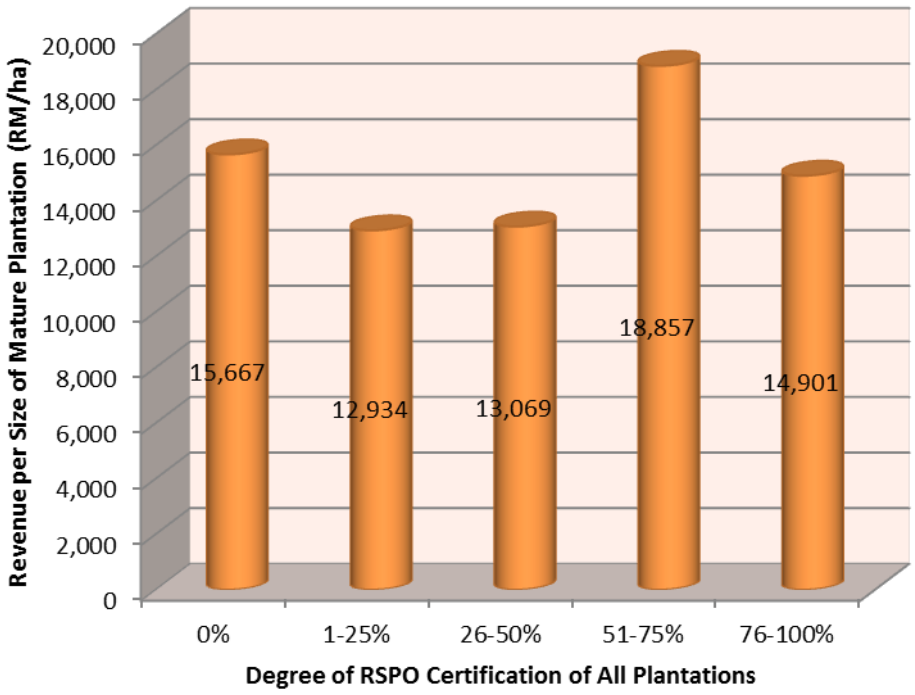

Figure 8 Average Revenue per Hectare of Mature Plantation as a Function of the Degree of RSPO-Certification (2014)

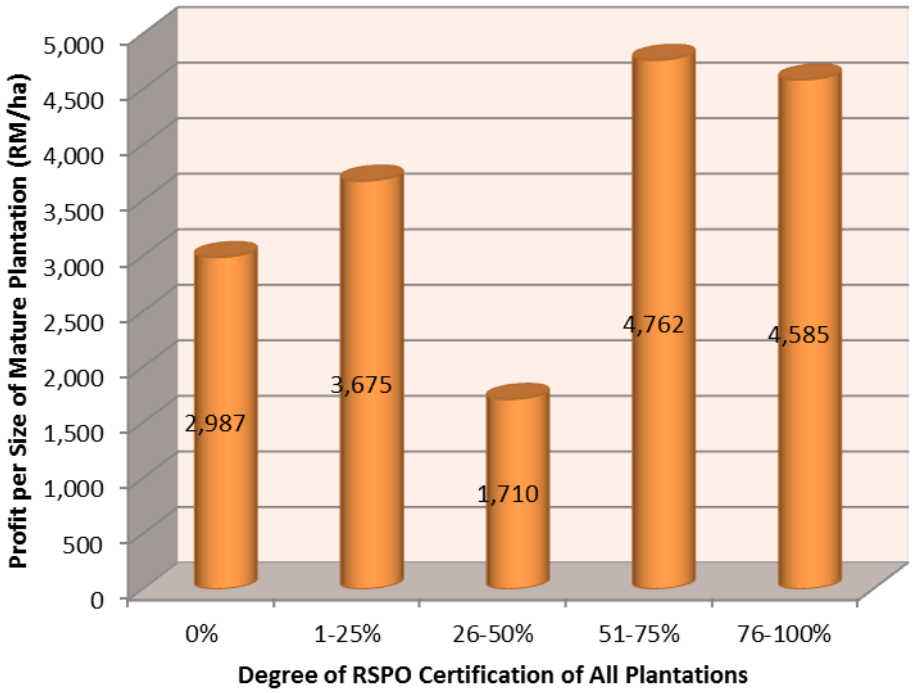

Figure 9 Average Profit (EBIT) per Hectare of Mature Plantation as a Function of the Degree of RSPO-Certification (2014)

4.3 Examination of Operational Indicators

Operational parameters are a key component when calculating profitability. The key ones are FFB yield in metric tons per hectare, CPO yield in metric ton per hectare and the oil extraction rate in percent. The data was grouped according to the criteria described in Section 4.2: (1) companies with minority of RSPO-certified plantations (i.e. less than 20%) and (2) companies with a majority of their planted areas RSPO-certified (i.e. greater than 40%). The results are tabulated in Table 10.

Table 10 Plantation Operational Indicators as a Function of Degree of RSPO-Certification (2014)

	Degree of Certification	Result	Std. Dev. (CL 90%)	Change	Data[xv]
FFB Yield (mt/ha)	Minority	17.0	± 1.9		17
	Majority	21.5	± 1.2	+ 4.5	13
Oil Extraction Rate (%)	Minority	21.45 %	± 0.66%		18
	Majority	22.22 %	± 0.64%	+0.77%	12
CPO Yield (mt/ha)	Minority	3.64	± 0.41		17
	Majority	4.92	± 0.27	+ 1.28	12

The two tail t-tests for the FFB Yield and the CPO Yield indicated that their respective minority and majority RSPO-certified results are significantly

[xv] The number of data sets used varies because not all data sets had the necessary information to do the analysis in question.

different. On the other hand, the two tail t-test for the oil extraction rate showed that the minority and majority RSPO-certified results were not significantly different.

To confirm these observations, the data for 2013 was prepared and presented in Table 11. The comparison between the two years shows that the 2013 results are almost identical those for 2014 with minor variations. This is expected because changes in the operational parameters would take place over an extended period of time and would be accompanied with a change in the best practices of the plantation.

Table 11 Plantation Operational Indicators as a Function of Degree of RSPO-Certification (2013)

	Degree of Certification	Result	Std. Dev. (CL 90%)	Change	Data[xvi]
FFB Yield (mt/ha)	Minority	17.0	± 1.7		18
	Majority	21.3	± 1.2	+ 4.3	13
Oil Extraction Rate (%)	Minority	21.49 %	± 0.55%		17
	Majority	22.14 %	± 0.64%	+0.65%	13
CPO Yield (mt/ha)	Minority	3.68	± 0.39		17
	Majority	4.82	± 0.25	+ 1.14	13

The improvements in the FFB yield and, consequently, the CPO yield can be attributed to a better control over the growing process by the agriculturists. This may be due to the improved data collection that takes place in conjunction with RSPO-certification because RSPO-certification requires that the plantation activities are well documented.

The data confirms that there is a real and significant increase of FFB and CPO yields and that these changes are due either directly or indirectly to the positive influence of the RSPO-certification. This is an embodiment of two of the RSPO Principles & Criteria[xvii]: Principle 4 states that growers and millers use appropriate best practices and Principle 8 encompasses the commitment to continuous improvement in key areas of activity.

4.4 Summary

In summary, a total of seven profitability indicators were examined: four that tested revenue-based data and three that looked at operational parameters. Of the revenue-based indicators, the CPO and the FFB prices showed trends as a function of sustainability but only the average CPO price demonstrated an increase that was statistically significant. On the other hand, neither the company annual revenue per mature plantation area nor the company annual profit per mature plantation area demonstrated a noticeable correlation to sustainability.

[xvi] The number of data sets used varies because not all data sets had the necessary information to do the analysis in question.

[xvii] www.simedarbyplantation.com/RSPO_Principles_-~_Criteria_%28P-~C%29.aspx

All of the operational parameters, the FFB yield per hectare, the CPO yield per hectare and the oil extraction rate, revealed trends as a function of sustainability. Yet only for the FFB yield and the CPO yield were these differences statistically significant.

5.0 Examining Other Influences

In order to determine whether the relationship between the average CPO price and the degree of RSPO-Certification was unique, a number of other parameters were tested to see if similar trends could be observed. By demonstrating that the relationship between the average CPO price and sustainability is unique, the case for the average CPO price as a reliable profitability indicator is reinforced. As will be shown in the following sections, the results of these investigations strengthened the conclusion that RSPO-Certification has a positive influence on profitability.

5.1 Effect of Related Parameters Such as Land Bank and Country of Origin

In order to test if there are other significant influences on the revenue indicator, a number of other potential variables were identified and their relationship to the average CPO price was graphed. These influences include:

- Size of mature plantations: To test if there is a correlation between the CPO price and the size of the palm oil producing acreage.
- Country of operation: To test if the country of production has an influence on the CPO prices.
- Downstream operations: Does the presence of downstream operations within the company structure, such as refineries or biodiesel plants, have an influence on the average CPO price?

The relationship between the 2014 average CPO price and the size of the mature palm oil producing area is shown in Figure 10. No trend is identifiable indicating that the size of a plantation company, as measured by mature growing areas, does not have an effect on the CPO price.

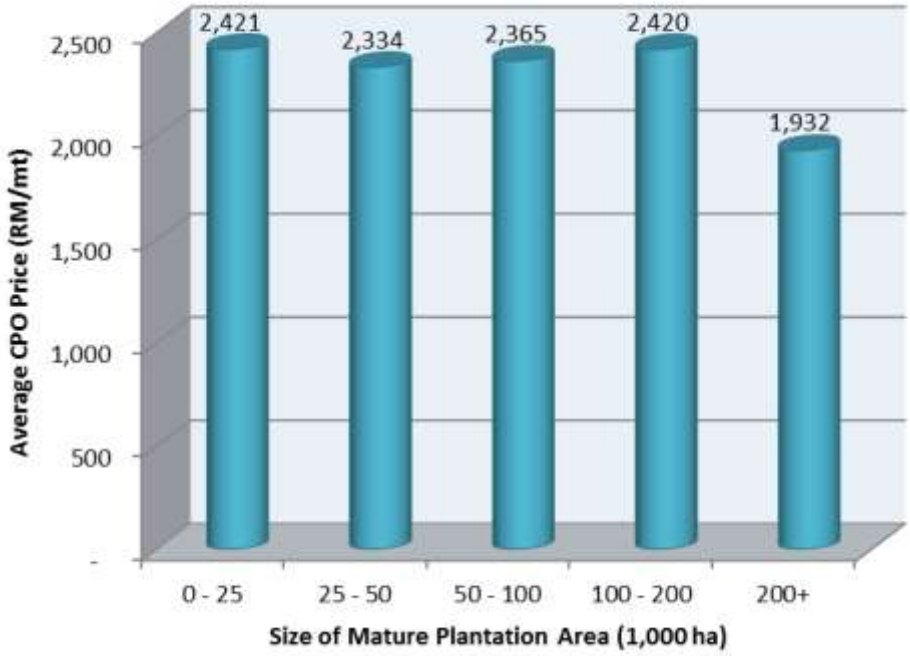

Figure 10 Average CPO Price as a Function of the Mature Plantation Area (2014)

Of particular interest is the relationship between the country of production and the average CPO price (see Table 12). To better visualize the data, a graphical version of the data is presented in Figure 11. As expected, the average CPO prices for minority RSPO-certified companies are lower than for majority RSPO-certified companies in both Malaysia and Indonesia. This is consistent with the earlier findings (see Table 8). It is also observed that the average Indonesian CPO prices in the minority certified group are lower than the average Malaysian CPO prices. This is a well-known statistic in the palm oil industry and is due to the different palm oil taxation policies and the different industry structures in Indonesia and Malaysia.

What is surprising is that the for the majority RSPO-certified group, the average CPO prices in Indonesia and Malaysia approach each other, with Indonesian prices almost equivalent to the Malaysian level (within the measurement error). This indicates that for RSPO-certified palm oil growers in Indonesia, the discount on their CPO prices, in relation to Malaysia, disappears. This appears to be a substantial advantage for Indonesian palm oil growers that invest in certifying their plantations according to RSPO standards.

Table 12 Average CPO Price as a Function of Country of Origin and RSPO Degree of Certification (2014)

	Degree of RSPO-Certification	Average CPO Price (RM/mt)	Error (CL 90%) (RM/mt)	Change (RM/mt)	Data[xviii]
Malaysia	Minority	2,342	± 37		10
	Majority	2,457	± 152	+ 115	3
Indonesia	Minority	2,250	± 37		8
	Majority	2,480	± 126	+ 230	7
All Countries	Minority	2,310	± 24		18
	Majority	2,468	± 63	+ 158	12

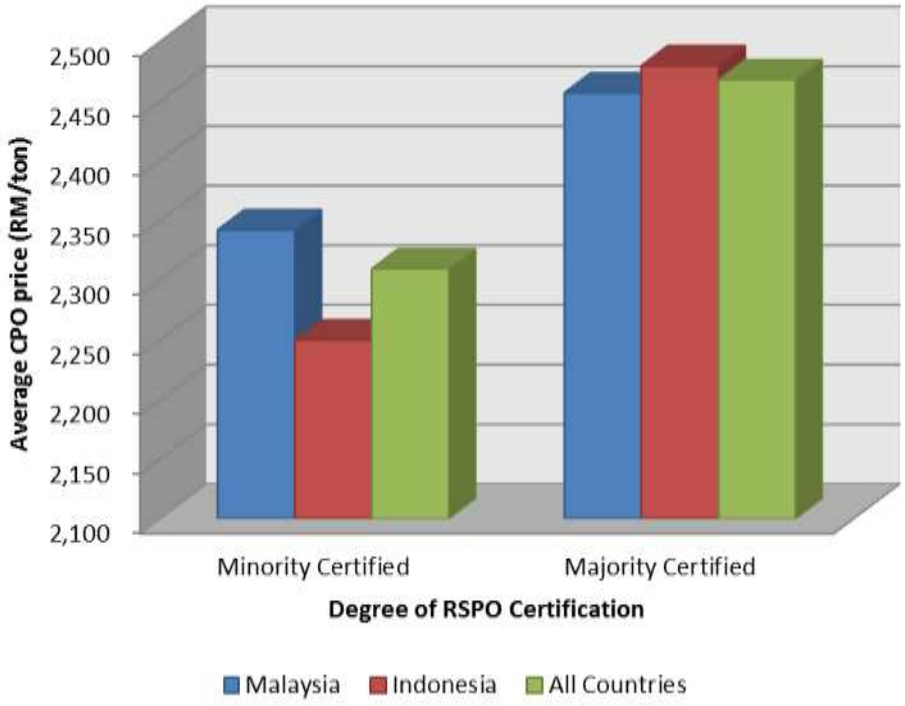

Figure 11 Average CPO Price for Malaysia, Indonesia and for "All Countries" (2014)

[xviii] The number of data sets used varies because not all data sets had the necessary information to do the analysis in question.

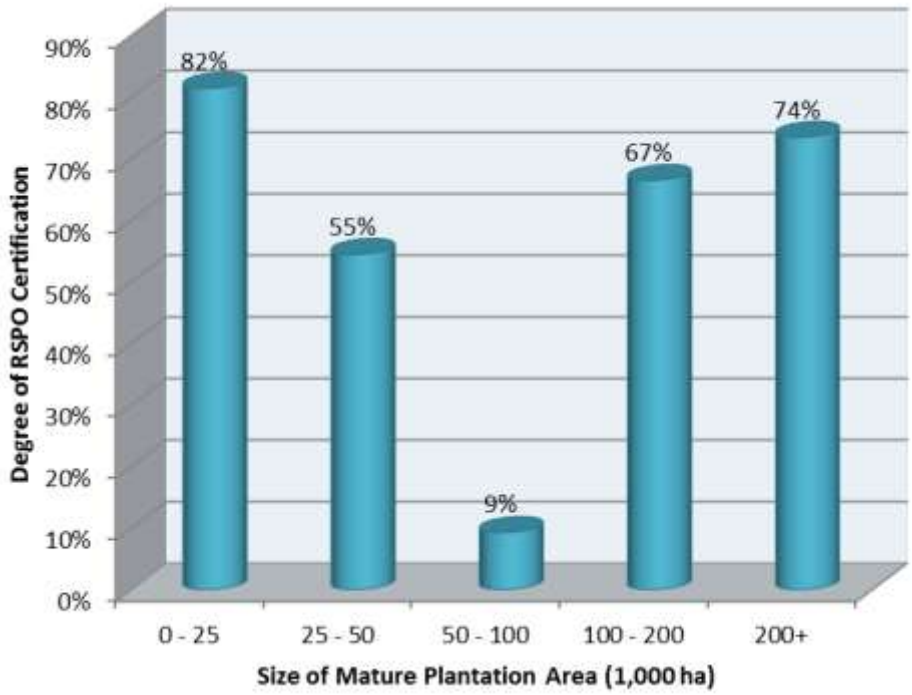

Figure 12 Degree of RSPO-Certification as a Function of the Mature Plantation Size – only with RSPO members (2014)

A common comment in the palm oil industry implies that only the large palm oil companies can afford to have their plantations RSPO-certified. In order to test this assumption, the degree of RSPO-Certification was plotted as a function of the size of the mature planted acreage (see Figure 12) using only RSPO members.

The resulting data appears to disprove the assumption: the average degree of RSPO-certification is randomly distributed across the different acreages for mature plantations. No trend is recognizable.

5.2 Effect of Downstream Operations

Downstream operations can have an influence on CPO prices because refineries and biodiesel plants within the same company can function as dedicated buyers of CPO from the company's own oil mills. In fact, some palm oil conglomerates require that the CPO requirements of their downstream activities must first be supplied by their own oil mills before externally produced CPO is procured. This can have an effect on the average CPO price and needs to be tested. Figure 13 and Table 13 depict the graphic and the tabular results for the average CPO price as a function of the downstream activities.

The two tail t-test for companies with and without downstream capacities showed that the average CPO price results were **not** significantly different. Hence, the presence of downstream activities does not significantly affect the average CPO price.

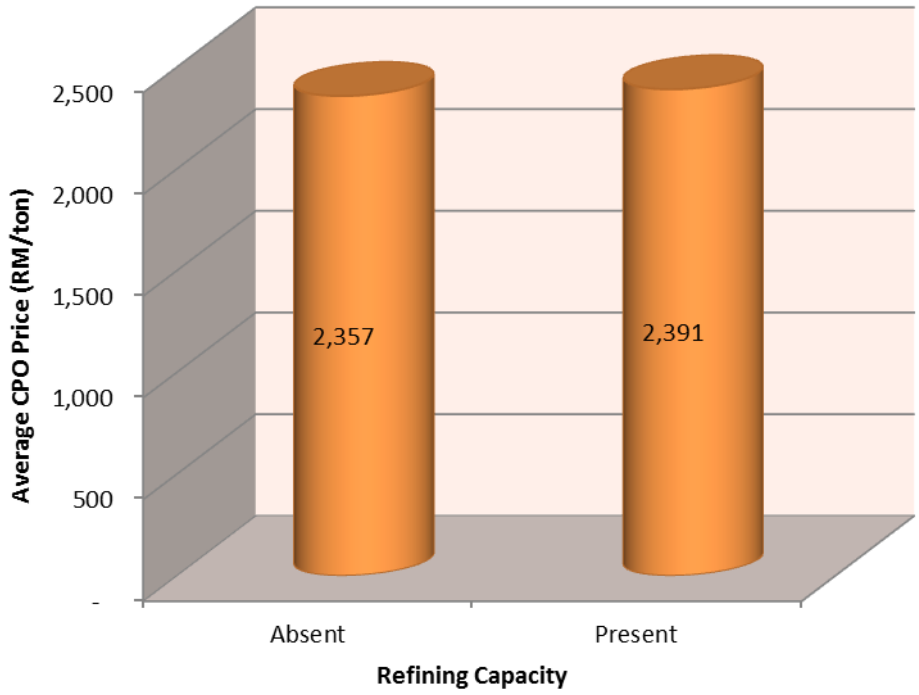

Figure 13 Average CPO Price as a Function of Refining Capacity (2014)

Table 13 Average CPO Price as a Function of Refining Capacity (2014)

		Average CPO Price (RM/ton)	Std. Dev. (CL 90%) (RM/mt)	Data[xix]
Refining Capacity	Absent	2,357	± 61	16
	Present	2,391	± 41	14

Another approach to check if there is a correlation between the downstream activities and the average CPO price is to examine the average CPO price as a function of the ratio between the refining capacity and the company's annual CPO production. For ratios below 100%, the company is producing more CPO than its downstream processes can take up. For ratios above 100%, companies can absorb their entire CPO production into their downstream processes.

The graph and the tabular results are shown in Figure 14 and Table 14. The two tail t-test carried out for 0 and 100+% for the refining capacity to CPO production ratio showed that the average CPO price results were **not** significantly different. The presence of downstream activities, even when expressed in a different manner, does not significantly affect the average CPO price.

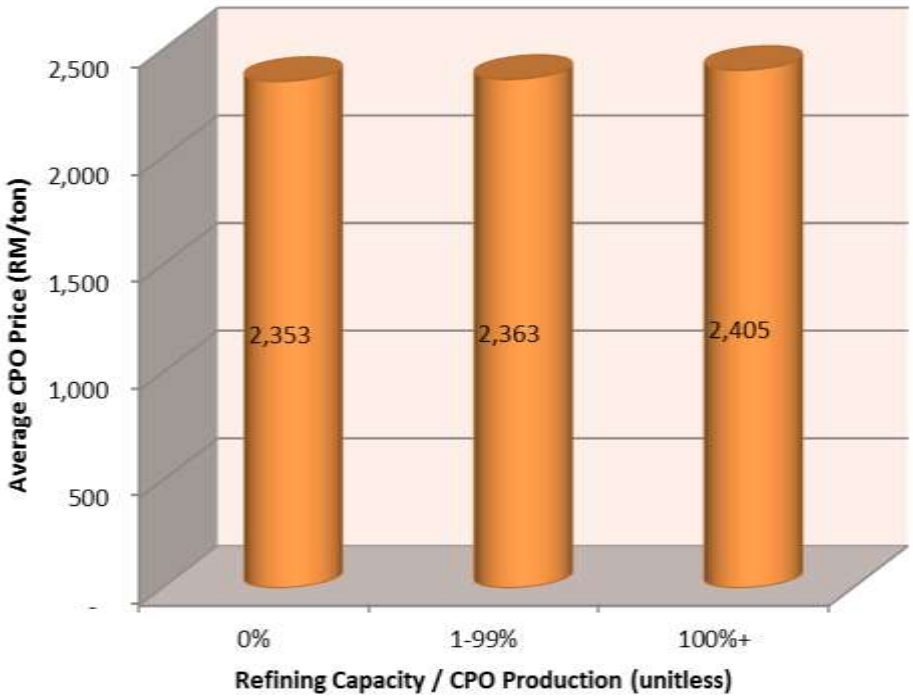

Figure 14 Function of the Average CPO Price with the Ratio: Refining Capacity/CPO Production (2014)

[xix] The number of data sets used varies because not all data sets had the necessary information to do the analysis in question.

Table 14 Average CPO Price as a Function of the Ratio between the Refining Capacity and CPO Production (2014)

		Average CPO Price (RM/ton)	Std. Dev. (CL 90%) (RM/mt)	Data[xx]
Ratio: (Refining Capacity / CPO Production)	0	2,353	± 58	17
	1-99%	2,363	± 134	2[xxi]
	100+%	2,405	± 50	11

An internal check of the database was performed by plotting the revenue per hectare as a function of the refining capacity in Figure 15. The graph demonstrates how the revenue per hectare increases with increasing downstream activities. This is a reflection of how adding value-added processes will maximise the overall revenue obtained from each hectare of the plantation.

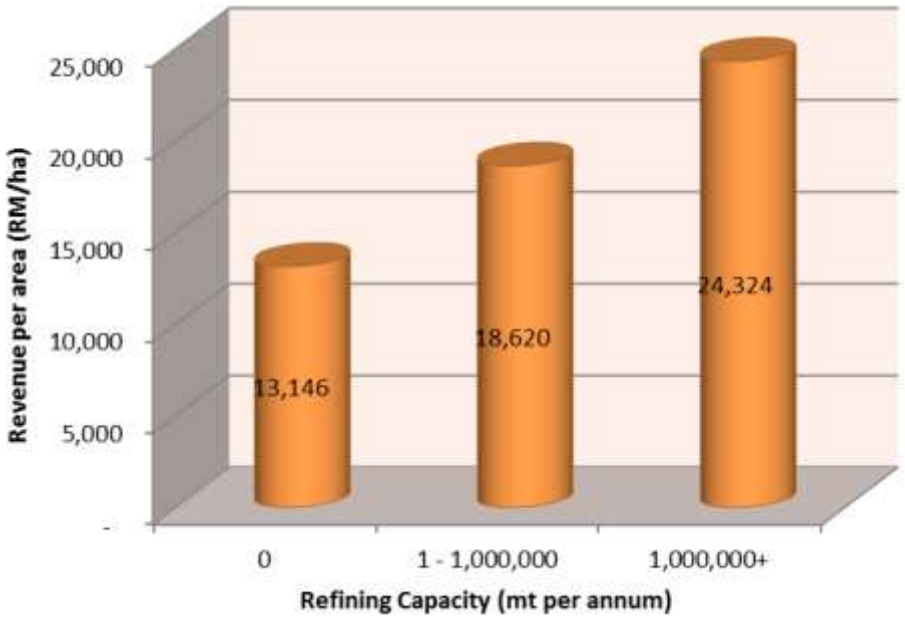

Figure 15 Company Revenue per Hectare as a Function of the Refining Capacity (2014)

An interesting correlation was found to exist between the degree of RSPO-certification and the refining capacity (see Figure 16). There appears to be direct relationship between the two variables. The two tail t-test indicates that only the

[xx] The number of data sets used varies because not all data sets had the necessary information to do the analysis in question.
[xxi] Too few data sets for a t-test.

data for the 0 mt p.a. and the 1,000,000 mt p.a. are significantly different. The other two data set comparisons are not significantly different.

When only the data for 0 mt p.a. and the 1,000,000 mt p.a. processing volumes are considered, the large difference in the degree of RSPO-Certification is remarkable: As the size of the downstream activities of a palm oil company increases, the more likely they have RSPO-certified a large portion of their plantations. A plausible reason is that these companies are closer to the palm oil end users and are trying to meet the end user's demand for sustainable palm oil. Whereas the palm oil companies without downstream activities are less aware of the importance of RSPO-Certification for their end users.

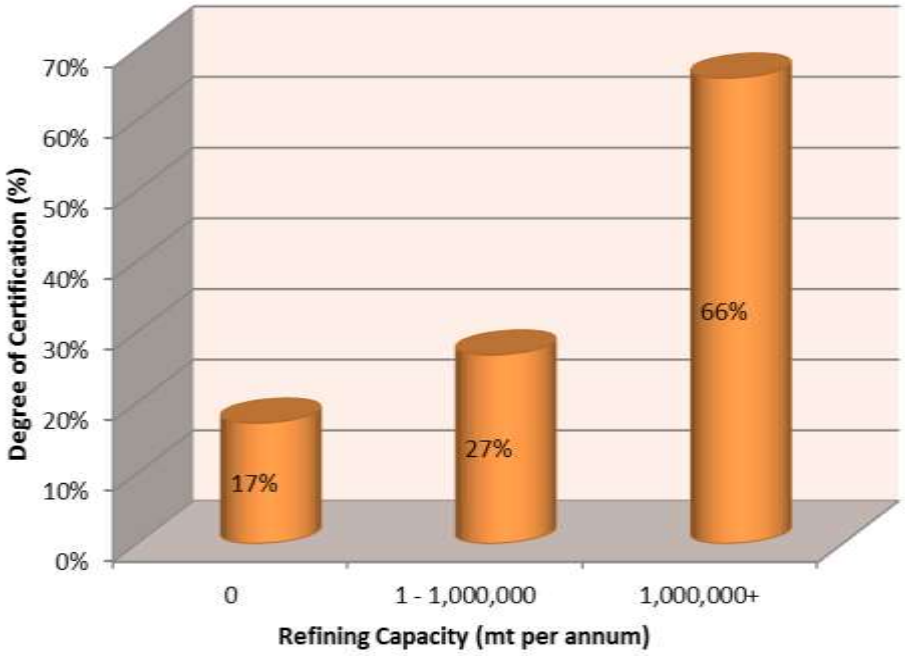

Figure 16 Degree of RSPO-Certification as a Function of Refining Capacity (2014)

6.0 Profitability from the Point of View of the Palm Oil Growers

One of the questions in the survey asked if companies had measured any difference in profitability after they had received RSPO-Certifications for producing sustainable palm oil. All of the eleven responses to the question were negative. One respondent had stated that they had "No profit, additional costs only". This view is shared by virtually the entire industry and can explain why many palm oil growers are not RSPO members and that certification among many RSPO members is not progressing as fast as it should.

One company that has a different point of view is TDM Plantation.[xxii] In their 2014 annual report[xxiii] on page 19, they state that their average CPO price of RM 2,432/mt is 50 RM higher than the average MPOB price[xxiv] of RM 2,382/mt. They attribute this premium to the fact that their CPO is RSPO-certified. Based on the results presented in this study,[xxv] TDM's selling price is RM 122 higher than the average non-certified palm oil.

One of the contributing factors leading to the impression that certification is not profitable stems from the perceived costs of certification. We asked companies to estimate the total cost of certification per hectare and the annual cost of maintaining the certification. The following table illustrates the widely divergent responses.

Table 15 Survey Response to the Cost of RSPO-Certification

	Cost of Certification (RM/ha)	Annual Cost of Maintenance (RM/ha)
Minimum value	5.52	5.52
Maximum value	700.00	660.59
Median response	25.00	30.00
Number of respondents	5	6

How these costs were calculated and which expenses were included were not requested as this was not the primary objective of the study.

Based on these highly divergent costs of RSPO-certification, it is advisable for RSPO to prepare an information paper on what the anticipated costs of certification are. This paper will give palm oil companies a method to realistic estimate their budget for certification. Likewise, it would define which costs are truly related to certification and which costs are not.

[xxii] TDM Plantations did not submit a completed questionnaire; all data is taken from their annual reports.
[xxiii] For reference, see: Appendix 2. Palm Oil Companies Chosen for the Survey and their Web References.
[xxiv] Note that the average MPOB price includes data from RSPO-certified plantations and is based on the industry-wide activities for the entire year.
[xxv] See: Table 8 Average CPO Prices as a Function of Degree of RSPO-Certification for 2013 & 2014

7.0 Profitability Calculations & Conclusions

The key results of the study are summarized below.

- The average CPO price is a statistically relevant revenue indicator for sustainability as measured by the percent RSPO-certified planting areas for palm oil growers. The average CPO price jumps when the level of RSPO-certification increases from below 20% to more than 40%. This increase can be interpreted as a tipping point for the adoption of sustainable practices in a palm oil company.
- The average FFB price also increases between minority and majority RSPO-certification levels but the increase is not statistically significant because of the small amount of data and its high variability.
- The plantation revenue per hectare and the profit (EBIT) per hectare are not suitable indicators to measure profitability correlated to sustainability.
- Operational parameters for palm oil plantations showed improvements for palm oil growers that had at least 40% RSPO-certified plantations. For the FFB yield (mt/ha) and the CPO yield (mt/ha) the differences were significantly different, but for the oil extraction rate (%) the difference was not statistically different.
- The average CPO price does not display any statistical trends as a function of mature plantation area. In other words, there is no correlation between the average CPO price and the size of the plantation.
- The average CPO price for Indonesia is at a discount compared to Malaysia but only for plantations with minority RSPO-certified plantations. When the level of RSPO-certified plantations is majority certified, the average CPO selling prices in Indonesia and Malaysia are roughly equivalent.
- The average degree of RSPO-certification has no dependency on the size of the mature plantation area. Hence, there is no evidence that only the large plantation companies can afford to RSPO-certify their plantations.
- The average CPO price is not dependent on the presence of downstream processing operations in the same corporation. This was examined using two comparisons; (1) with the annual downstream refining capacity and (2) the ratio of refining capacity to the CPO production. In neither case, could a statistically significant difference be measured.
- The degree of RSPO-certification of plantations increased with the downstream refining capacity possibly indicating that palm oil companies with downstream activities were more responsive to their end-users regarding the importance of certifying their plantations than a pure plantation company with no downstream activities.

One effective method for measuring profitability involves comparing the revenue per hectare under different conditions. In this study, only the revenue for the CPO production[xxvi] will be used as an indicator and is determined by the product of the average CPO price and the CPO yield per hectare. This is an effective measurement of how much income a company can generate from CPO for each hectare of land in its

[xxvi] For example, the revenue due to the palm kernels or the palm kernel oil is not considered.

possession. Table 16 and Table 17 compare the revenue per hectare before and after certification for the years 2013 and 2014.

Table 16 Profitability Calculations for 2014

	Minority RSPO-Certified Plantations		Majority RSPO-Certified Plantations		Source
	Value	Error (CL 90%)	Value	Error (CL 90%)	
Average CPO Price (RM/mt)	2,310	± 24	2,468	± 63	Table 8
CPO Yield (mt/ha)	3.64	± 0.41	4.92	± 0.27	Table 10
CPO Revenue (RM/ha)	8,400	± 900	12,100	± 700	
Difference (RM/ha)	-	-	3,700 (+45%)	± 1,200	
Median Price of Certification (RM/ha)	-	-	25	-	Table 15
RSPO-certification Leveraged Revenue	-	-	150		

Table 17 Profitability Calculations for 2013

	Minority RSPO-Certified Plantations		Majority RSPO-Certified Plantations		Source
	Value	Error (CL 90%)	Value	Error (CL 90%)	
Average CPO Price (RM/mt)	2,252	± 33	2,463	± 74	Table 8
CPO Yield (mt/ha)	3.68	± 0.39	4.82	± 0.25	Table 10
CPO Revenue (RM/ha)	8,300	± 900	11,900	± 700	
Difference (RM/ha)	-	-	3,600 (+43%)	± 1,100	
Median Price of Certification (RM/ha)	-	-	25	-	Table 15
RSPO-certification Leveraged Revenue	-	-	144		

The average increase in revenue in both years due to RSPO-certification is approximately 44%, translating to an average increase of RM 3,600 to RM 3,700 per hectare of plantation.

By using the median cost of certifying a plantation, RM 25 /ha, it is possible to calculate how much RSPO-certification was able to leverage additional revenue. In 2013 it was 144 and in 2014 it was 150.

It is of note that of the eleven palm oil companies that answered the survey question as to whether they had observed a profit as a result of the RSPO-Certification, none responded positively.

In conclusion, the key profitability indicators for certification are the average CPO price and the CPO yield. Both increase significantly as the level of RSPO-certification in a palm oil company increases above 40%. The average RSPO-certification leveraged revenue for an investment in sustainability is circa 150 based on the median cost of certifying a plantation. The average change in profitability due to the RSPO-certification was RM 3,700 /ha in 2014 which is an average net increase of 45%.

Appendixes

The appendixes include background information used in the study and a number of case-studies using the data calculated from the study. Whenever possible, the arguments are based on numerical or factual information. Nonetheless, some of the explanations are more speculative in nature and open to interpretation.

Appendix 1. Copy of Questionnaire

RSPO Questionnaire on Correlating Sustainability to Profitability

1	Company Name :		
2	Your name / position:		
	Your e-mail :		
	Your phone number :		
	Your Skype address :		

		2013	2014
3	Plantation division: Annual revenue		
4	Plantation division: Annual profit (EBIT)		
5a	**Total** oil palm plantation land base (in ha):		
5b	- Land base in Malaysia (ha)		
	- Land base in Indonesia (ha)		
	- Land base in Papua New Guinea (ha)		
	- Land base in other Countries (ha)		
5c	- Land base with Mature Plants (ha)		
	- Land base with Immature Plants (ha)		
6a	Total FFB yield (mt)		
6b	Average FFB yield (mt per ha)		
6c	Total CPO production (mt)		
6d	Average CPO yield (mt per ha)		
7	Average Oil Extraction Rate (%)		
8	Annual average FFB selling price (per mt)		

9a	Annual average CPO selling price (per mt) for all countries:		
9b	- Annual average CPO selling price (per mt) in Malaysia:		
	- Annual average CPO selling price (per mt) in Indonesia:		
	- Annual average CPO selling price (per mt) in Papua New Guinea:		
	- Annual average CPO selling price (per mt) in other Countries:		
10a	**Total** downstream refining capacity (mt per annum)		
10b	- Downstream refining capacity in Malaysia (mt per annum):		
	- Downstream refining capacity in Indonesia (mt per annum):		
	- Downstream refining capacity in Papua New Guinea (mt per annum):		
	- Downstream refining capacity in other Countries (mt per annum):		

11a	Are you a member of RSPO? (yes/no)	
11b	If yes to 11a, what percent of your plantations are RSPO certified? (%)	
11c	If you have RSPO-certified your plantations, have you measured any change in profitability due to the certification? (yes/no)	
11d	If yes to 11c, what was your measured change in profitability? (per ha)	
11e	If you have RSPO-certified your plantations, what is the total estimated cost of certification per hectare from start to end?	
11e	If you have RSPO-certified your plantations, what is the cost of maintaining the certification per hectare per year?	
11f	If the RSPO certification is not yet completed, what year do you anticipate full certification?	

12a	Have you been certified under any other certification schemes?	
12b	If yes, which ones? (for example; ISCC, ISPO, MSPO, RSB)	
12c	If yes, what percent of your plantations have been certified under the schemes listed in 12b? (%)	
12d	If the certification in 12b is not yet completed, what year do you anticipate full certification?	
13	Comments:	

THANK YOU FOR YOUR HELP!

Appendix 2. Palm Oil Companies Chosen for the Survey and their Web References

	Company Name	Source for Annual Report
1	Boustead Plantations	www.bousteadplantations.com.my/investor_relations.html
2	Bumitama Agri Ltd.	http://ir.bumitama-agri.com/annuals.cfm
3	Felda Global Ventures	http://ir.chartnexus.com/fgv/reports.php
4	Genting Plantations	www.genting.com/annualreports/gb.htm
5	Golden Agri-Resources Ltd.	http://www.goldenagri.com.sg/ir_annual_reports.php
6	Goodhope Plantations	http://www.carsoncumberbatch.com/investor_information/investor_information_good_hope_plc.php
7	IJM Plantations	http://www.ijm.com/web/investor/annualReports.aspx
8	IOI	http://www.ioigroup.com/Content/IR/IR_Reports
9	Kuala Lumpur Kepong	http://www.klk.com.my/investor-relations/annual-reports-circulars/
10	Kulim	http://www.kulim.com.my/
11	M.P. Evans Group PLC	http://www.mpevans.co.uk/mpevans/en/investors
12	PT Eagle High Plantations	http://eaglehighplantations.com/investor.html
13	PT Musim Mas	No annual report available
14	PT Smart Tbk	http://www.smart-tbk.com/ir_annual_reports.php
15	Sime Darby Plantation Sdn Bhd	http://www.simedarby.com/Annual_Report.aspx
16	Sipef	http://www.sipef.be/annual_reports.html
17	PT Socfin Indonesia	http://www.socfin.com/Public/Period_page.php?ID=939&ancestor1=1052&ancestor2=1709
18	TDM Plantation	http://tdm.irplc.com/investor-relations.html
19	United Plantations	http://www.unitedplantations.com/
20	Wilmar International Ltd	http://ir-media.wilmar-international.com/phoenix.zhtml?c=164878&p=irol-reportsAnnual
21	Cepatwawasan Group	http://www.cepatgroup.com/investor-annreports.html
22	Gozco Plantations	http://www.gozco.com/annual.html
23	Jaya Tiasa Holdings Bhd	http://jayatiasa.listedcompany.com/ar.html
24	Oriental Rubber & Palm Oil	http://ohb.com.my/annual-report.aspx
25	PT Astra Agro Lestari Tbk	http://www.astra-agro.co.id/index.php/astra-agro-lestari-in-brief

26	PT Jaya Agra Wattie Tbk	http://www.jawattie.com/investor-relations/annual-report
27	PT Provident Agro Tbk	http://www.provident-agro.com/annual.php
28	Tiga Pilar Sejahtera Food	http://www.tigapilar.com/investor_relation
29	Sarawak Oil Palms	http://www.sop.com.my/?page_id=75
30	TH Plantations	http://ir.chartnexus.com/thplantation/report.php
31	Sarawak Plantation Bhd	http://spb.listedcompany.com/ar.html
32	Ta ANN Group	http://www.bursamalaysia.com/market/listed-companies/company-announcements/subscribe/5012/option2#/?category=AR
33	BLD Plantation Bhd	http://www.bldpb.com.my/investor-relations/annual-report/

Appendix 3. How to Estimate the Additional Revenue due to RSPO-Certification

One of the key outputs from this study is to estimate how much additional revenue can be expected for investments to certify a palm oil plantation using RSPO-principles and criteria. The following calculations are meant to give palm oil company planners a practical method to estimate the potential financial returns of investments in certifying their plantations. The data used is drawn from the results of this study.

1) The first step is to determine the current returns from a hectare of plantation. Based on this study, in 2014 the average un-certified plantation will generate 3.64 mt of CPO per hectare[xxvii] and the CPO will have an average price of 2,310 RM per mt.[xxviii] Hence, on average a hectare of un-certified plantation will yield RM 8,400 based only on revenue from the CPO production.
2) Next we can estimate the average anticipated returns after certification (based on 2014 data). The average certified plantation will generate 4.92 mt of CPO per hectare[xxvii] and the certified CPO will have an average price of RM 2,468 per mt.[xxviii] Hence, on average a hectare of certified plantation will yield RM 12,100 based only on revenue from the CPO production.
3) The premium for certification for this average plantation is RM 3,700 / ha. If we take the median price for certifying a hectare of land,[xxix] RM 25.00, it is possible to calculate the size of the leveraging effect. Put another way, for every Ringgit invested, there is a return of 150 Ringgits in additional revenue.

By using the company's own data, a customized projection for the increased revenue based on their investments in certification can be calculated using local conditions and company-specific costs.

[xxvii] See: Table 10 Plantation Operational Indicators as a Function of Degree of RSPO-Certification (2014)
[xxviii] See: Table 8 Average CPO Prices as a Function of Degree of RSPO-Certification for 2013 & 2014
[xxix] See: Table 15 Survey Response to the Cost of RSPO-Certification

Appendix 4. From an Investor's Point of View

Following on from the previous section on calculating the estimated increase in revenue due to certification by RSPO, a similar approach can also be used by investors to determine a valuation for palm oil companies based on their level of certification and their commitment to sustainability. It is also possible to benchmark operational and economic performance for RSPO certified plantations and those that are not certified.

Investors can also use the information to determine the economic potential of a palm oil company's strategy regarding sustainability and certification. For example, the rate of adoption of sustainable practices and a company's level of leadership in the industry will be key factors in determining their profitability in a highly competitive market.

Furthermore, it is inconceivable to imagine that investors would be willing to accept lower returns for palm oil companies that do not pursue an active certification strategy when similar companies are being certified by RSPO and are enjoying a premium on their land banks. Suitable plantation land for palm oil is scarce in south-east Asia, so companies that can extract the highest value from their existing land bank are expected to receive a positive evaluation.

Although this was not part of this study, it would be of interest to determine how the returns for investments for sustainability compare to the returns for establishing new plantations. Specifically: Does an investment in sustainability generate more or less additional revenue than the purchase of new land intended for the development into a palm oil plantation? And which returns can be realized in a shorter time span?

Appendix 5. Understanding RSPO-Certification & Increases in Profitability

This appendix concerns a practical understanding of the findings in this report and how to interpret them.

Certification is a process which involves the implementation of a management-initiated policy on a company's way of doing business. This means certification takes time and effort until the new procedures are formulated, tested and then adopted. This means it is unrealistic for a company to certify all its palm oil plantations within a 6-month time period. There isn't time for the new way of doing business to permeate the business structure and to take hold in the attitudes and work ethics of the workforce.

Likewise, the benefits of certification, as described in this report, take time to manifest. The benefits are part of the process and will not automatically appear with the presentation of an RSPO Sustainability Certificate. It is possibly for this reason that many palm oil companies are not able to identify the profitably of the certification process. It is gradual and the increases in profitability are difficult to recognize in the short term. In fact, even if the improvements are noticed they may have been attributed to other factors, resulting in opinions that declare that RSPO is a market requirement that only incurs costs but not profits.

The final point to note is that this study uses averages to determine how the profitability indicators have changed with certification. This means that some companies will do better, and others worse, than the average. These differences are due to the business climate in which the palm oil industry operates. In any case, it was shown that the palm oil grower that undergoes the RSPO-certification process will improve its long term competitiveness.

Appendix 6. Is There a Limit to Sustainable Practices?

Looking into the (not to distant) future, we can consider what happens when the majority of plantations are certified. Will there still be a premium when sustainable practices are standard throughout the industry?

The 2014 snapshot of the palm oil industry illustrates that the majority of palm oil companies are not RSPO members and a number of the RSPO members are behind on their plans to certify their plantations. It is precisely these conditions that ensure that the premiums for sustainability are high. With a limited supply of sustainably certified palm oil, purchasers need to pay a supplement to lock in their certified sustainable palm oil supplies. It is to be expected that with increasing supplies this premium would diminish. There are number of reasons this may not be the case any time soon.

The prevalent view is that current standards for sustainability are not stringent enough to fully meet the requirements of many consumers and environmental NGOs. It is expected that as the industry moves en masse to meet the current standards, these standards will be revised to stricter conditions. The introduction of "RSPO Next" standards are a response to meeting these mounting expectations by the consumers. This will, in turn, ensure that the status quo continues to exist; this time with a limited supply of "RSPO Next" certified palm oil which can command its own premium.

Once the profit/premium element for sustainable palm oil is established, the sustainability process can develop into a race to the top; with companies looking to introduce new innovative standards, instead of being content of just meeting the basic standards, to safeguard their share of the premium market.

Appendix 7. The Case of Growers that are RSPO Members but have no Certified Plantations

There are palm oil plantation companies that have become members of RSPO but, for a variety of reasons, have not certified any of their growing areas. Three of these companies were included in this survey. The following table compares their averaged profitability indicators with both non-members and with companies that have majority RSPO-certified plantations. Figure 17 is a graphical representation of these results.

Table 18 Profitability Indicators of RSPO Members with no Certifications

Indicators	Un-certified RSPO Companies[xxx]	Non-RSPO Members[xxxi]	Change	RSPO – Certified Companies[xxxii]	Change
Average CPO Price (RM/mt)	2,314	2,310	+ 4 (+0.2%)	2,468	- 154 (-7%)
FFB Yield (mt/ha)	18.9	16.3	+2.6 (+14%)	21.5	-2.6 (-14%)
CPO Yield (mt/ha)	4.1	3.4	+0.8 (+18%)	4.9	-0.8 (-19%)
Overall (RM/ha) (CPO Price x CPO Yield)	9,539	7,787	+1,752 (+18%)	12,139	-2,601 (-27%)

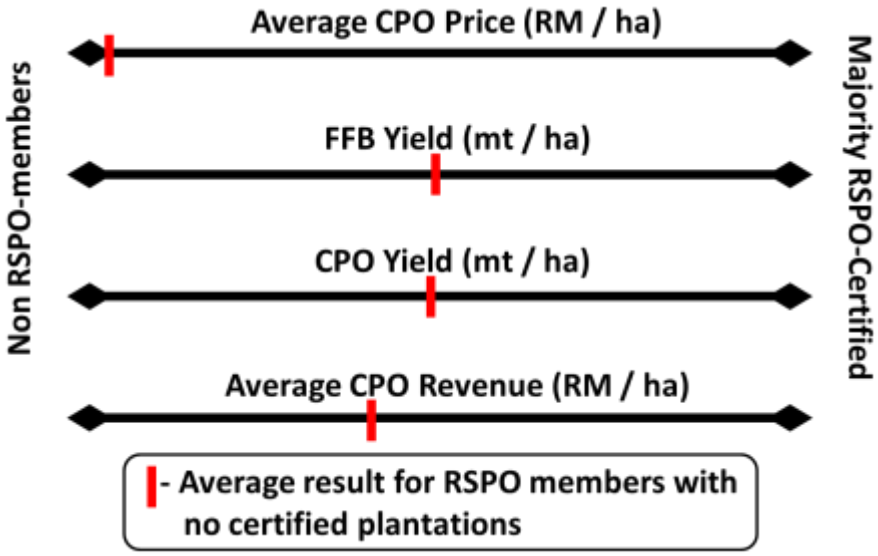

Figure 17 Graphical depiction of the profitability indicators for RSPO members with no certified plantations

It is immediately apparent that being an RSPO member without certified plantations does not automatically result in a premium price for their CPO: The average CPO prices for RSPO members without certified plantations is the essentially identical to that for non-

[xxx] The values of the three companies were averaged to get the resulting data.
[xxxi] This data encompasses 11 to 12 companies.
[xxxii] These companies have majority RSPO-certified plantations.

members, and both are significantly lower than those for RSPO members with majority RSPO-certified growing areas. It is interesting to note that the operational indicators for RSPO members without certified plantations lie between those for non-members and majority RSPO-certified plantations as this may be a sign of the preparatory work being carried out by these RSPO members for an imminent certification of their properties.

In summary, RSPO membership does not automatically qualify a company to obtain a premium on their CPO prices. None-the-less, it is possible to observe improvements in a company's operational parameters as they prepare for RSPO-Certification.

Appendix 8. Setting Your Own Sustainability Standards

It is the philosophy of a few palm oil companies to set their own sustainability standards and forgo the official certification route. The company has to be large enough and possess sufficient credibility to publish its sustainability standards and then abide by them. It is an approach that has been described in detail in the book "Beyond Certification" by Scott Poynton.

To test the effect of this approach on profitability, a company was selected that has published their standards for sustainable development but is not a member of RSPO and, hence, has not had any of their plantations certified by RSPO standards. The company, PT Astra Agro Lestari,[xxxiii] met these conditions. Their "zero deforestation policy" was published on September 21, 2015.[xxxiv]

Tabular and a graphical comparisons of Astra Agro Lestari's key profitability indicators (2014) with those for other non-RSPO members and majority RSPO-certified companies are below.

Table 19 Astra Agro Lestari's Profitability Indicators

Indicators	PT Astra Agro Lestari Values[xxxv]	Non-RSPO Members[xxxvi]	Change	RSPO – Certified Companies[xxxvii]	Change
Average CPO Price (RM/mt)	2,287	2,310	-23 (-1%)	2,468	-181 (-8%)
FFB Yield (mt/ha)	22.0	16.3	+5.7 (+26%)	21.5	+0.5 (+2%)
CPO Yield (mt/ha)	4.8	3.4	+1.5 (+30%)	4.9	-0.1 (-2%)
Overall (RM/ha) (CPO Price x CPO Yield)	11,067	7,787	+3,281 (+30%)	12,139	-1,072 (-10%)

[xxxiii] The company, PT Astra Agro Lestari Tbk, did not submit a completed questionnaire. All company information used in this report was taken from their annual reports.

[xxxiv] See the article by Mike Gaworecki published on September 21, 2015: http://news.mongabay.com/2015/09/second-largest-palm-oil-producer-in-indonesia-commits-to-zero-deforestation/

[xxxv] The data for the PT Astra Agro Lestari values was taken from their 2014 annual report. (See: Appendix 2. Palm Oil Companies Chosen for the Survey and their Web References)

[xxxvi] This data encompasses 11 to 12 companies.

[xxxvii] These companies have majority RSPO-certified plantations.

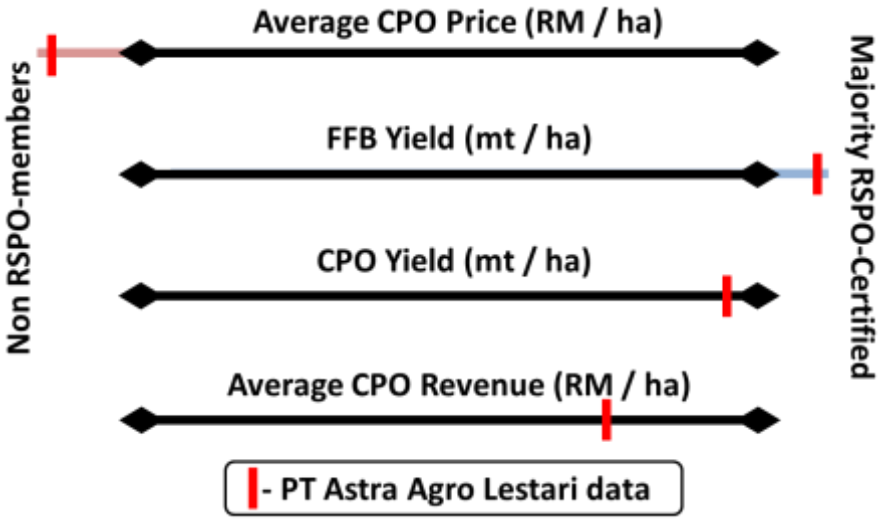

Figure 18 Graphical depiction of the profitability indicators for PT Astra Agro Lestari

The overall lower CPO price that PT Astra Agro Lestari received is in part compensated by their excellent operational parameters resulting in a slightly lower return per hectare than the average majority RSPO-certified company. The superior operational parameters can be considered a reflection of the company's commitment to improving their plantation operations from both a technical and a sustainable perspective.

It will be interesting to see if Astra Agro Lestari's average CPO price increases relative to average industry CPO price in the coming years in response to their publicly stated commitment to deforestation.

The RSPO is an international non-profit organization formed in 2004 with the objective to promote the growth and use of sustainable oil palm products through credible global standards and engagement of stakeholders.

www.rspo.org

RSPO SECRETARIAT SDN BHD
(787510-K)

Unit A-37-1, Level 37, Tower A,
Menara UOA Bangsar
No. 5 Jalan Bangsar Utama 1,
59000 Kuala Lumpur

T +603 2302 1500
F +603 2302 1542
E rspo@rspo.org

RSPO
Roundtable on Sustainable Palm Oil