# Recent Development in the World Palm Oil Prices: An Overview

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**ABSTRACT**

*In the past, there have been spikes in the palm oil price, mainly due to the demand and supply imbalance of oils and fats, in particular, that for soyabean oil. However, since mid 2006, the month-to-month spikes have become more pronounced and sustained, and been attributed not only to the overall supply and demand imbalance of edible oils and fats but also to the increasing demand for the oils as fuel. This development has shifted the demand curve for palm oil to the right. In this article, the impacts of the trend will be assessed on the consumption, trade, price competitiveness, investment in oil palm/palm oil and the use of palm oil for producing biodiesel.*

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## WORLD VEGETABLE OILS PRICE SITUATION

In early 2000s, the prices of oils and fats have been generally bullish. After a slight dip in 2001, the price of palm oil rebound to USD 471/t, an increase of 52% from USD 310/t in 2000 (*Table 1*). The price of soyabean oil, a substitute for palm oil, almost doubled from USD 334/t in 2000 to USD 616/t in 2004. Rapeseed oil price did not even decline in 2001 due to its steady demand for biofuel in Europe, and in 2004 was USD 685/t, 97% increase from 2000.

As shown in *Table 1*, the prices of vegetable oils moderated in 2005. Soyabean oil price fell 20% to USD 545 but rapeseed oil decrease only marginally to USD 669. Although the price of palm oil fell to USD 422, this was still 36% more as compared to 2000. After the slight correction, the market rebounded with greater strength from 2006 onwards (*Table 2*).

Palm oil rose 37.5% through 2006 alone - from USD 424 in January to USD 583 in December and has continued its climb in 2007 - to USD 599 in January and then a record high of USD 870 in October (*Table 2*). Soyabean oil was largely in tandem - up 31.4% in 2006, from USD 532 in January to USD 699 in December, then to USD 697 in January 2007 and USD1007 at end October.

Rapeseed oil strengthened the most in 2006, gaining 67% from USD 733 to USD 856. However, it hesitated in January (USD 818) before roaring further ahead to USD 1213 in October. The late bullishness of sunflowerseed oil was notable. Rising only 23% through 2006, it powered ahead 94% over January-October 2007. The skyrocketing price to a record high USD 1400 was mainly driven by the demand for edible oils for non-food uses.

*Figure 1* summarizes the price scenarios of the four vegetable oils over 2006-2007 taking their prices

**TABLE 1. ANNUAL AVERAGE WORLD VEGETABLE OIL PRICES (USD/t), 2000-2007**

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007* |
|---|---|---|---|---|---|---|---|---|
| SBO | 334 | 306 | 397 | 515 | 616 | 545 | 599 | 827 |
| RSO | 347 | 402 | 485 | 600 | 685 | 669 | 794 | 899 |
| CPO | 310 | 286 | 390 | 443 | 471 | 422 | 478 | 745 |
| SFO | 392 | 484 | 594 | 593 | 684 | 677 | 658 | 944 |
| **Price increase index (2000 = 100)** | | | | | | | | |
| SBO | 100 | 92 | 119 | 154 | 184 | 163 | 179 | 248 |
| RSO | 100 | 116 | 140 | 173 | 197 | 193 | 229 | 259 |
| CPO | 100 | 92 | 126 | 143 | 152 | 136 | 154 | 240 |
| SFO | 100 | 123 | 152 | 151 | 174 | 173 | 168 | 241 |

Notes: * For 2007 – only up to October.
SBO – soyabean oil.
RSO – rapeseed oil.
CPO – crude palm oil.
SFO – sunflowerseed oil.
Source: Oil World (various issues).

in 2000 as 100. All the oils rallied in early 2006. Then palm oil surged beginning April 2006 and has ever since maintained its strong performance. However, from August 2007, even this dynamism of palm oil was superseded by sunflower oil for the reasons explained above.

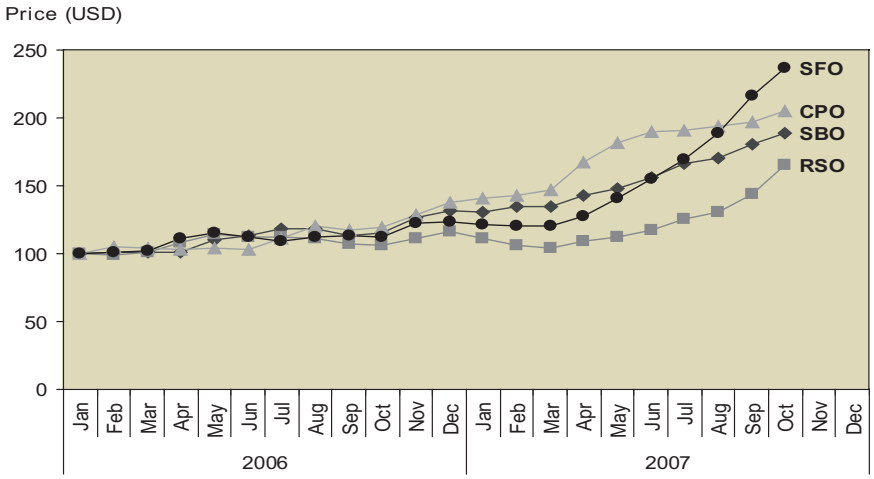
## SURGE IN PRICE ARISING FROM DEMAND FROM THE ENERGY SECTOR

Biofuels have been increasingly looked at due to the increasing concern over energy security, environmental considerations and escalating fossil fuel prices. With

**TABLE 2. MONTHLY AND QUARTERLY PERFORMANCE OILS AND FATS PRICE (USD/t)**

| Month | SBO | Quarterly average | RSO | Quarterly average | CPO | Quarterly average | SFO | Quarterly average |
|---|---|---|---|---|---|---|---|---|
| **2006** | | | | | | | | |
| Jan | 532 | - | 733 | - | 424 | - | 591 | - |
| Feb | 535 | 535 | 723 | 733 | 445 | 436 | 595 | 597 |
| Mar | 539 | - | 742 | - | 440 | - | 606 | - |
| Apr | 540 | - | 796 | - | 439 | - | 659 | - |
| May | 588 | 576 | 838 | 819 | 440 | 439 | 679 | 668 |
| Jun | 601 | - | 822 | - | 437 | - | 666 | - |
| Jul | 630 | - | 822 | - | 471 | - | 647 | - |
| Aug | 629 | 620 | 812 | 806 | 510 | 493 | 666 | 661 |
| Sep | 602 | - | 784 | - | 497 | - | 669 | - |
| Oct | 615 | - | 781 | - | 507 | - | 666 | - |
| Nov | 675 | 663 | 814 | 817 | 547 | 546 | 722 | 706 |
| Dec | 699 | - | 856 | - | 583 | - | 730 | - |
| Average | 599 | *31.4%* | 794 | *67.8%* | 478 | *37.5%* | 658 | *23.6%* |
| **2007** | | | | | | | | |
| Jan | 697 | - | 818 | - | 599 | - | 719 | - |
| Feb | 714 | 710 | 781 | 788 | 605 | 609 | 709 | 714 |
| Mar | 718 | - | 765 | - | 622 | - | 713 | - |
| Apr | 761 | - | 799 | - | 710 | - | 755 | - |
| May | 788 | 794 | 825 | 828 | 772 | 762 | 831 | 834 |
| Jun | 833 | - | 860 | - | 805 | - | 916 | - |
| Jul | 885 | - | 921 | - | 811 | - | 999 | - |
| Aug | 909 | 918 | 955 | 976 | 821 | 822 | 1 114 | 1 131 |
| Sep | 959 | - | 1 051 | - | 835 | - | 1 279 | - |
| Oct | 1 007 | - | 1 213 | - | 870 | - | 1 400 | - |
| Average | 827 | *44.4%* | 899 | *48.3%* | 745 | *45.2%* | 944 | *94.7%* |

Notes: Prices for 2007 are only until October. Figures in italics are the percentages change in the prices for the year.
SBO – soyabean oil.
RSO – rapeseed oil.
CPO – crude palm oil
SFO – sunflowerseed oil.
Source: Oil World (various issues).




Note: Plotted from the data tabulated in *Table 2*.

*Figure 1. Movements in vegetable oil price indices (January 2006 =100).*

the crude oil price ever rising, there has been increased urgency to use alternative fuels including biodiesel. Europe has been the frontrunner in the use of biofuels, with production increasing from about 2.88 million tonnes in 2005 to 6.11 million tonnes in 2007 (*Table 3*) (de Lavigne, 2007). About 60%-70% of the feedstock is rapeseed oil and 20%-30% soyabean oil. Although palm oil is cheaper, its use is only about 10%.

**TABLE 3. EUROPEAN UNION BIODIESEL PRODUCTION (million tonnes)**

| | 2005 | 2006 | 2007 |
|---|---|---|---|
| **Production** | 2.88 | 4.39 | 6.11 |
| **Import** | 0.02 | 0.03 | 0.03 |
| **Consumption** | 3.03 | 4.21 | 5.56 |
| **Export** | 0.07 | 0.12 | 0.39 |

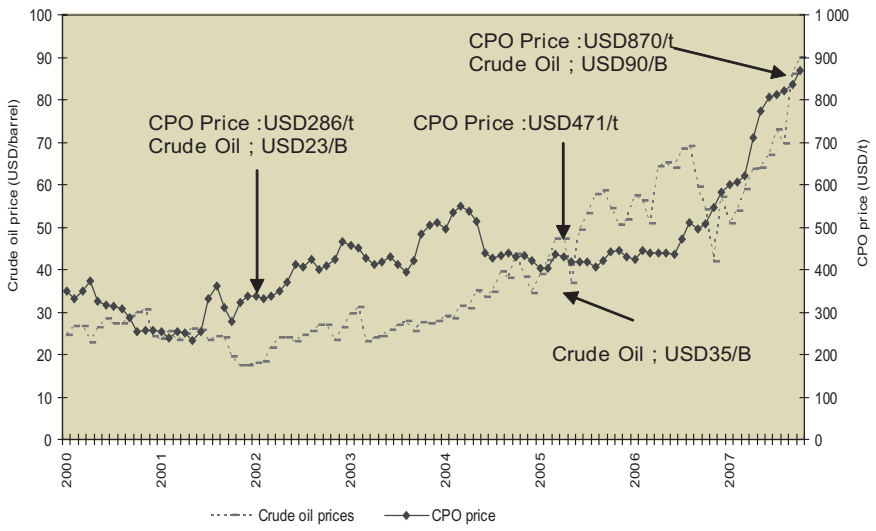
Source: FAS Posts.

Prior to 2006, the prices of crude oil and palm oil moved independently. Although both generally tended in the same direction, there was no obvious close correlation between them (*Figure 2*). However, since beginning 2006, the palm oil price has been swaying to the tune of the energy market. Political instability in the major oil producing countries as well as long-term concern on petroleum reserves had caused fossil fuel prices to surge, prompting a look-out for alternative fuels which was a major cause of the phenomenal increases in the prices of feedstocks. By the third-quarter of 2007, crude oil had reached a record USD 98 per barrel and the increased use of vegetable oils as fuel had caused a supply shortage. Being a cheaper feedstock, palm oil consequently appreciated with greater bullishness than the other edible oils.

The demand curve of palm oil is now shifted rightward with more and more vegetable oils being diverted from their traditional food uses. Prior to 2006, palm oil was cheaper than crude oil at USD 75, and it made sense for palm methyl esters to be used instead of diesel. Thus, the demand for palm oil as fuel emerged, driven by its price competitiveness vis-à-vis crude oil.

The soyabean oil price is influenced by the feed grain market, because planting more grains means planting less soyabean, and *vice versa*. In 2005, there was an unprecedented surge in the corn price from USD 109/t to USD 179 in 2007 (Earlley *et al.*, 2005; Steenblink, 2007; FAO, 2007a,b), a 64% increase. Wheat increased 43% from USD 150 to USD 215 (*Table 4*), with the strong demand for it and corn as feedstocks for bioethanol.

As grains became more profitable, there was a shift away from planting soyabean in the US. This change may be permanent, or at least as long as bioethanol production remains in vogue (Thone, 2006). The reduced soyabean production is expected to cause its price to rise, and by that place a long-term upward pressure on the price of soyabean oil and also palm oil as soyabean oil is the closest substitute to palm oil.



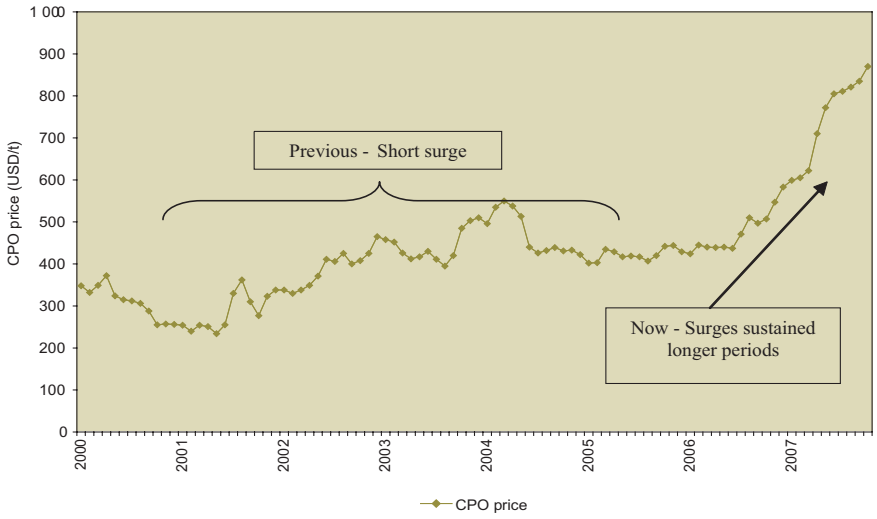

Sources: Energy Information Administration (e.i.a) and Oil World (various issues).

*Figure 2. Crude and palm oil price movement (2000-2007).*

**TABLE 4. PRICES OF WHEAT AND MAIZE**

| Commodity | Average price in 2005 (USD/t) | Average price, 1 January - July 2007 (USD/t) | Percentage change in nominal terms, 2005 to 2007 (to date) |
|---|---|---|---|
| Wheat | 150 | 215 | 43% |
| Maize | 109 | 179 | 64% |

Source: Steenblik (2007).




Source: Oil World (various issues).

*Figure 3. Crude palm oil price movements (USD/t).*

## IMPACTS OF INCREASED PRICES

The economic fundamentals for pricing edible oils have thus, changed with their new demand for fuel. Throughout the recent long price surge (*Figure 3*), there had been no apparent negative impacts on palm oil as its demand curve shifted to the right with its additional demand for non-food use.

### Price Increase and Effects on Consumption

The world consumption of palm oil was not unduly affected by its recent rise in price. On a quarterly basis, its consumption increased from 8.3 million tonnes in first-quarter of 2006 to 9.3 million tonnes in fourth-quarter (*Appendix 1*). In 2007, consumption in first quarter remained at 9.3 million tonnes and is expected to increase to almost 10 million tonnes by the end of 2007.

China remains the largest consumer of palm oil[1]. Although the largest producer of oilseeds, she still needs to imports oils and fats to supplement its rapidly growing domestic requirement. China has steadily increased its consumption of palm oil (*Tables 5a* and *5b*). Even in 1995, with the imports heavily taxed, it was using 1.3 million tonnes. Abolishment of the tariff rate quota (TRQ) in 2001 boosted the imports. In recent years, its consumption has continued to rise unabated despite the surge in price. In 2007, China's consumption is expected to reach 5.6 million tonnes, an additional of 200 000 t from 2006. Malaysian palm oil has consistently maintained a 60% market share in China throughout the 1998-2006 period.

Close behind China is the European Union (EU) which consumption of palm oil increased from 4.6 million tonnes in 2006 to 4.7 million tonnes in 2007, the demand mainly driven by its (palm oil) *trans* fatty acid (TFA) free status. In the EU, 80% of palm oil is used for food and only 10%-15% for biofuel, which mainly uses its own rapeseed oil. Thus, any shortage of rapeseed oil will be advantageous for palm oil as its fractions are cheaper substitutes for the manufacture of shortening, bakery fats, speciality fats and margarine or spreads. In the EU, price and familiarity with palm oil have continued to be the driving force for its increased use in food applications.

Palm oil consumption in India (third largest consumer) was also not affected by its price surge, increasing 0.5 million tonnes from 2006 to 3.6 million tonnes in 2007. Although the import duty on oilseeds was increased to protect local producers, imports of palm oil continued apace, mainly as the crude oil from Indonesia. The price increase affected the poor and middle class more, they being the more ardent consumers of the oil. On the other hand, Pakistan remained a one million tonne market with consumption at 1.6 million tonnes even during the high prices of 2006-2007. The USA showed impressive demand

[1] China huge crushing capacity. Beans and oilseeds are imported to cater for the crushing industries with resultant effects of availability of edible oils flooding the domestic market. Thus, imported oils such as palm oil is competing with the locally grown oilseeds as well as those beans or oilseeds being imported for the crushing industry.

growth for palm oil, increasing its take from 0.24 million tonnes to 0.7 million tonnes, mainly due to TFA issues.

The surge in price did not greatly affect consumption by the low income countries. In Myanmar, for instance, palm oil remained the major oil used with 40% of the total edible oil consumption, followed by groundnut oil (20%) and sesame seed oil (18%). In the north-west of the country, groundnut oil is consumed but occasional shortages have prompted some switch to cheaper palm oil. Olein, commonly blended with groundnut or sesame oils, is popular in the south. More than 85% of the palm oil imported is consumed as food and the remainder for making soap.

## Price Increase and its Effects on Trade

Palm oil has for long been the largest traded vegetable oil (*Appendix 1*). Despite its rapid increase in price, the world palm oil trade was sustained at 30 million tonnes compared with soyabean oil in second place with 10 million tonnes in 2006. The

**TABLE 5a. CONSUMPTION OF PALM OIL BY SELECTED COUNTRIES, 1995 - 2000 ('000 t)**

| Year | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|
| China | 1 305.2 | 1 094.6 | 1 701.0 | 1 548.6 | 1 406.5 | 1 633.3 |
| India | 757.3 | 1 212.8 | 1 368.2 | 1 817.2 | 2 973.1 | 3 732.3 |
| Pakistan | 1 166.5 | 1 148.5 | 1 103.6 | 1 129.4 | 1 061.8 | 1 083.9 |
| EU | | | | | | |
| Germany | 361.9 | 415.7 | 405.5 | 419.4 | 396.6 | 447.7 |
| Netherland | 231.3 | 258.3 | 287.0 | 369.3 | 392.1 | 355.6 |
| Other EU | 1 169.4 | 1 155.0 | 1 232.6 | 1 261.8 | 1 394.4 | 1 563.8 |
| Total EU | 1 762.6 | 1 829.0 | 1 925.1 | 2 050.5 | 2 183.1 | 2 367.1 |
| USA | 90.8 | 104.5 | 133.8 | 126.3 | 136.2 | 143.8 |
| Asia | | | | | | |
| Malaysia | 1 098.0 | 1 236.2 | 1 191.3 | 984.5 | 1 230.7 | 1 365.5 |
| Indonesia | 2 159.4 | 2 527.9 | 2 840.9 | 2 806.3 | 2 894.9 | 2 927.3 |
| Myanmar | 269.5 | 249.7 | 269.7 | 273.3 | 240.2 | 213.0 |
| World palm oil | 14 769.0 | 16 051.0 | 17 593.0 | 17 605.0 | 19 472.0 | 21 749.0 |
| World oils & fats | 92 370.0 | 96 824.0 | 100 623.0 | 103 014.0 | 108 240.0 | 113 756.0 |
| Palm oil price (USD) | 628.0 | 531.0 | 546.0 | 671.0 | 436.0 | 310.0 |

**TABLE 5b. CONSUMPTION OF PALM OIL IN SELECTED COUNTRIES, 2001 - 2006 ('000 t)**

| Year | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|
| China | 2 165.1 | 2 649.8 | 3 283.1 | 3 681.0 | 4 340.0 | 5 430.0 |
| India | 3 619.0 | 3 548.9 | 4 150.8 | 3 396.0 | 3 309.0 | 3 074.0 |
| Pakistan | 1 240.0 | 1 350.0 | 1 349.4 | 1 342.0 | 1 516.0 | 1 585.0 |
| EU | | | | | | |
| Germany | 513.6 | 605.8 | 563.4 | 596.8 | 634.4 | 765.1 |
| Netherland | 477.9 | 577.4 | 575.1 | 600.6 | 772.9 | 766.3 |
| Other EU | 1 858.9 | 2 039.1 | 2 280.0 | 2 695.6 | 2 979.7 | 3 033.6 |
| Total EU | 2 850.4 | 3 222.3 | 3 418.5 | 3 893.0 | 4 387.0 | 4 565.0 |
| USA | 182.6 | 195.1 | 208.4 | 240.0 | 376.0 | 570.0 |
| Asia | | | | | | |
| Malaysia | 1 474.4 | 1 501.1 | 1 568.3 | 1 781.6 | 1 964.7 | 2 180.1 |
| Indonesia | 2 877.0 | 3 027.1 | 3 169.5 | 3 347.0 | 3 546.1 | 3 721.3 |
| Myanmar | 192.0 | 160.5 | 216.0 | 254.4 | 304.0 | 328.9 |
| World palm oil | 23 795.1 | 25 420.1 | 28 233.0 | 30 048.6 | 33 400.2 | 36 253.7 |
| World oils & fats | 117 850.0 | 121 389.0 | 125 466.0 | 131 388.0 | 139 342.0 | 148 309.0 |
| Palm oil price (USD) | 286.0 | 390.0 | 443.0 | 471.0 | 422.0 | 478.0 |

Source: Oil World (Various issues).

trade in palm oil increased in 2007 despite its rising price. Beginning with a relatively low volume in early 2006, the trade gained momentum to considerably higher until October. The trade in the last two years was not affected by the high price. Exports from Malaysia and Indonesia were not affected by their domestic use and the buying countries raised their imports by their increased economic prosperity, *e.g.*, China and India.

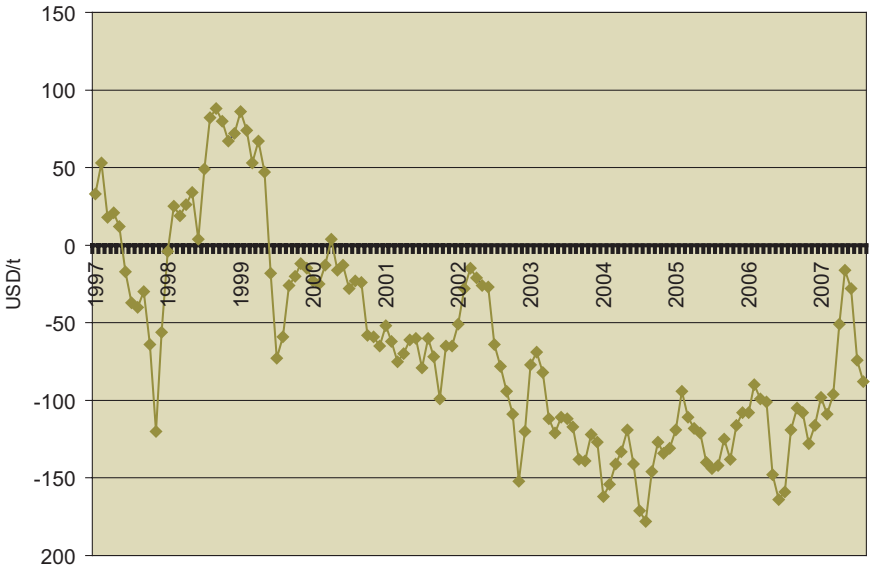
Despite its rise in price, the price competitiveness of palm oil remained. As shown in *Figure 4*, palm oil was still cheaper than soyabean oil. With its traditional discount to soyabean oil, palm oil enjoyed greater inroads into populous markets like China, India and Pakistan. However, over the last two years, the discount has narrowed. It averaged only USD 63, far lower than earlier due to the strong rally in the palm oil price since beginning 2006. The highest soyabean oil price premium was USD 178 in mid 2004, but it had shrunk to only USD 4 in mid 2007.

On a quarterly basis, the export of palm oil increased steadily from 6.4 million tonnes in first-quarter of 2006 to 8.7 million tonnes (*Figure 5*). A similar trend was observed in 2007, although export in the first-quarter slightly dropped to 6 million tonnes but then rebounded to close to 8 million tonnes at third-quarter of 2007. Almost 80% of all the exports originated from Malaysia and Indonesia.

## Price Increase Enhances Investment in Oil Palm Planting

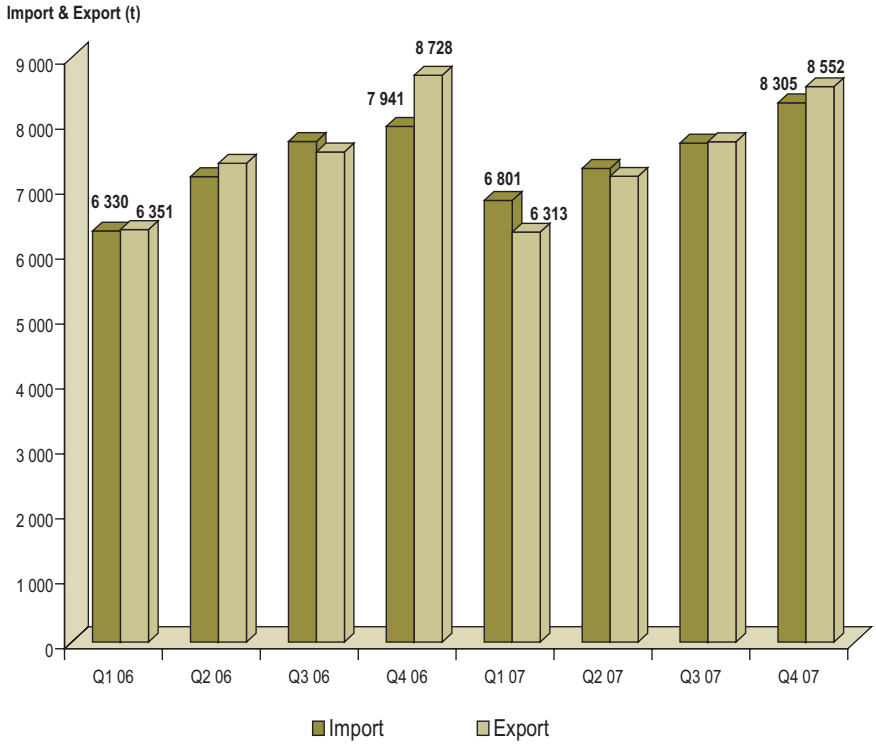
The rise in palm oil price encouraged investment in oil palm cultivation with its global area rising from 6.5 million hectares in 2000 to 10.5 million hectares in 2007, especially in Indonesia, Papua New Guinea, Colombia and Ivory Coast (*Table 6*). The Indonesian area increased 10.33% a year over 2000-2007 against the world average of 6.82%. By the end of 2006, it had 4.0 million hectares of the planted area, boosted by increased foreign direct investment (FDI) in Riau, Jambi, South Sumatra, West Kalimantan and South Sulawesi. Indonesia now has more oil palm than Malaysia with the limited land size of the latter.

With the increasingly higher prices and little change in its production cost, the profitability from producing palm oil has become more attractive. In Indonesia and Malaysia for instance, greater margins are now realized as palm oil price skyrocketing to a record level




Source: Oil World (various issues).

*Figure 4. Palm oil price discount to soyabean oil.*




Source: Oil World (various issues).

*Figure 5. Import and export of palm oil (quarterly: 2006-2007).*

**TABLE 6. OIL PALM PLANTED AREAS IN SELECTED COUNTRIES ('000 ha)***

| Year | World | Malaysia | Indonesia | Colombia | Ivory Coast | PNG |
|---|---|---|---|---|---|---|
| 2000 | 6 520 | 2 945 | 2 014 | 134 | 139 | 72 |
| 2001 | 6 996 | 3 053 | 2 465 | 138 | 137 | 75 |
| 2002 | 7 298 | 3 109 | 2 734 | 147 | 138 | 79 |
| 2003 | 7 945 | 3 320 | 2 973 | 153 | 138 | 83 |
| 2004 | 8 584 | 3 402 | 3 320 | 157 | 152 | 85 |
| 2005 | 9 186 | 3 552 | 3 690 | 170 | 160 | 88 |
| 2006 | 9 843 | 3 678 | 4 120 | 184 | 167 | 92 |
| 2007 | 10 532 | 3 790 | 4 580 | 200 | 168 | 96 |
| Growth rate | 6.82 | 3.60 | 10.33 | 6.18 | 3.40 | 4.11 |

Note: * These figures are matured area.
Sources: Oil World (Various issues) and MPOB (various issues).

against the back drop of production cost of USD 165 and USD 239, respectively (*Table 7*). In Malaysia in 2000, the gross margin was 40% from an average price of only USD 310/t. In 2007, with the higher price, the margin was 286%, and would even be higher in Indonesia with its lower production cost.

**TABLE 7. COST OF PRODUCTION OF PALM OIL IN SELECTED COUNTRIES: 2000**

| Country | USD/t |
|---|---|
| Indonesia | 165 |
| Malaysia | 239 |
| Colombia | 292 |
| PNG | 215 |

Source: LMC (2001).

## Price Increase and its Effects on Biodiesel Production

*Europe.* The EU directive on using biodiesel for motor vehicles has stimulated its use (*Table 8*). By end of 2007, total biofuel demand was estimated at 8.53 million tonnes. In the past, palm oil was a cheap raw material (FAO, 2007a,b) for biodiesel, but with the increases in its price (and also the prices of other vegetable oils), biodiesel production in Europe has stymied. As biodiesel is at the very end of a value chain, its profitability is heavily dependent on the price of its feedstock. As illustrated in *Table 9*, palm-based methyl esters was much more attractive in 2006 than its rapeseed oil counter-part. Producing it gave an estimated gross margin of USD 50/t compared to a negative USD 50 for rapeseed oil. But with its recent high price, palm oil is no longer economic as biofuel in Europe. Per barrel, the price is now more than USD 110, far above crude oil. Taxation/ subsidy would have to be resorted to sustain production. Electricity production using palm oil has also become unprofitable prompting a shift to fossil fuels. Purchasing activity had generally slowed down recently due to uncertainty in price.

*Malaysia.* The recent increases in the palm oil price had also affected the viability of biodiesel production. To produce biodiesel, the fixed cost is USD 177/t, inclusive of the glycerin credit. When the palm oil price was low (*e.g.*, USD 450/t), there was great interest to produce biodiesel with 92 licence applications, half of which were

**TABLE 8. EUROPEAN UNION TARGETS FOR BIODIESEL USE (million tonnes)**

| Year | Target share (% of total demand) | Biodiesel demand | Total biofuel demand |
|---|---|---|---|
| **2005** | 2.00 | 2.53 | 4.87 |
| **2006** | 2.75 | 3.48 | 6.70 |
| **2007** | 3.50 | 4.43 | 8.53 |
| **2008** | 4.25 | 5.38 | 10.36 |
| **2009** | 5.00 | 6.33 | 12.18 |
| **2010** | 5.75 | 7.28 | 14.01 |

Source: Steenblink (2007).

**TABLE 9. BIODIESEL FEEDSTOCK COST COMPARISON (2007)**

| Feedstock (t) | Rapeseed methyl ester (RME) | | Palm methyl ester (PME) | |
|---|---|---|---|---|
| | 2006 | 2007 | 2006 | 2007 |
| Feedstock | 800 | 900 | 550 | 750 |
| Conversion cost | 200 | 200 | 200 | 200 |
| Landed cost | 1 000 | 1 100 | 750 | 950 |
| Selling price | 950 | 1 000 | 800 | 900 |
| Gross profit (t) | -50 | -100 | 50 | -50 |

Source: Estimated based on de Lavigne (2007).

approved. The fatty acid methyl esters (FAME) then commanded USD 800 to USD 900/t, giving a good margin.

But as shown in *Table 10*, with the palm oil price now at more than USD 610/t the profit is miniscule at a FAME price of USD 800. As it is, even the price of palm oil today is above the FAME price, effectively stopping biodiesel production. Out of four plants once operational, only one is now being run, and even this at reduced capacity.

Biodiesel investment is highly capital intensive. For a 100 000 t annual capacity, the capital investment can be USD 30 million. When such large investment is contemplated with its long-term risks, the internal rate of return (IRR) should be more than 10% for the investment to be attractive.

## CONCLUSION

Consumption and trade in palm oil have continued to rise with the developing economies taking the major portion. There has been no impact on demand but the surging palm oil price has somewhat dampened the downstream sector; especially biodiesel production. The favourable price has encouraged more oil palm planting than ever in view of the low production cost of palm oil.

Over the long-term, world palm oil will continue to serve the needs of its consumers, especially in providing nutrition in many countries deficient in edible oils and fats. With less soyabean planted because of the demand for grains for bioethonol production, the price of palm oil is expected to remain strong. Domestically, the high palm oil price has affected downstream activities such as biodiesel and, to some extent, the refining sector for supplying the local market.

**TABLE 10. GROSS MARGIN IN BIODIESEL PRODUCTION (USD/t)**

| | | Gross margin at FAME price of | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CPO price | Cost of PME produced* | 700 | 750 | 800 | 850 | 900 | 950 | 1 000 | 1 050 | 1 100 |
| 450 | 627 | 73 | 123 | 173 | 223 | 273 | 323 | 373 | 423 | 473 |
| 470 | 647 | 53 | 103 | 153 | 203 | 253 | 303 | 353 | 403 | 453 |
| 490 | 667 | 33 | 83 | 133 | 183 | 233 | 283 | 333 | 383 | 433 |
| 510 | 687 | 13 | 63 | 113 | 163 | 213 | 263 | 313 | 363 | 413 |
| 530 | 707 | **-7** | 43 | 93 | 143 | 193 | 243 | 293 | 343 | 393 |
| 550 | 727 | **-27** | 23 | 73 | 123 | 173 | 223 | 273 | 323 | 373 |
| 570 | 747 | **-47** | 3 | 53 | 103 | 153 | 203 | 253 | 303 | 353 |
| 590 | 767 | **-67** | **-17** | 33 | 83 | 133 | 183 | 233 | 283 | 333 |
| 610 | 787 | **-87** | **-37** | 13 | 63 | 113 | 163 | 213 | 263 | 313 |
| 630 | 807 | **-107** | **-57** | **-7** | 43 | 93 | 143 | 193 | 243 | 293 |
| 650 | 827 | **-127** | **-77** | **-27** | 23 | 73 | 123 | 173 | 223 | 273 |
| 670 | 847 | **-147** | **-97** | **-47** | 3 | 53 | 103 | 153 | 203 | 253 |
| 690 | 867 | **-167** | **-117** | **-67** | **-17** | 33 | 83 | 133 | 183 | 233 |
| 710 | 887 | **-187** | **-137** | **-87** | **-37** | 13 | 63 | 113 | 163 | 213 |
| 730 | 907 | **-207** | **-157** | **-107** | **-57** | **-7** | 43 | 93 | 143 | 193 |
| 750 | 927 | **-227** | **-177** | **-127** | **-77** | **-27** | 23 | 73 | 123 | 173 |
| 770 | 947 | **-247** | **-197** | **-147** | **-97** | **-47** | 3 | 53 | 103 | 153 |
| 790 | 967 | **-267** | **-217** | **-167** | **-117** | **-67** | **-17** | 33 | 83 | 133 |
| 810 | 987 | **-287** | **-237** | **-187** | **-137** | **-87** | **-37** | 13 | 63 | 113 |
| 830 | 1 007 | **-307** | **-257** | **-207** | **-157** | **-107** | **-57** | **-7** | 43 | 93 |
| 850 | 1 027 | **-327** | **-277** | **-227** | **-177** | **-127** | **-77** | **-27** | 23 | 73 |
| 870 | 1 047 | **-347** | **-297** | **-247** | **-197** | **-147** | **-97** | **-47** | 3 | 53 |
| 890 | 1 067 | **-367** | **-317** | **-267** | **-217** | **-167** | **-117** | **-67** | **-17** | 33 |
| 910 | 1 087 | **-387** | **-337** | **-287** | **-237** | **-187** | **-137** | **-87** | **-37** | 13 |

Notes: * Includes of processing cost of USD177/t. PME – palm methyl ester. FAME – fatty acid methyl ester.
Source: Simulations based on various cost estimates.

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*Appendix 1*

## WORLD BALANCE IN OILS AND FATS

**Oil and fats: world summary balances (1000 t)**

| Oil | Year | 2006 | | | | |
|---|---|---|---|---|---|---|
| | Quarter | Q1 Jan/Mar | Q2 Apr/Jun | Q3 Jul/Sep | Q4 Oct/Dec | Total |
| SBO | Open'g stock | 3 373 | 3 306 | 3 655 | 3 924 | **14 258** |
| | Production | 8 224 | 8 911 | 8 938 | 9 197 | **35 270** |
| | Imports | 2 488 | 2 369 | 2 732 | 2 755 | **10 344** |
| | Exports | 2 224 | 2 451 | 2 865 | 2 844 | **10 384** |
| | Ending stocks | 3 306 | 3 655 | 3 924 | 3 937 | **14 822** |
| | Disappear | 8 554 | 8 481 | 8 535 | 9 096 | **34 666** |
| RSO | Open'g stock | 1 154 | 1 320 | 1 481 | 1 331 | **5 286** |
| | Production | 4 527 | 4 691 | 4 450 | 4 781 | **18 449** |
| | Imports | 431 | 558 | 554 | 536 | **2 079** |
| | Exports | 444 | 463 | 605 | 589 | **2 101** |
| | Ending stocks | 1 320 | 1 481 | 1 331 | 1 399 | **5 531** |
| | Disappear | 4 347 | 4 625 | 4 551 | 4 660 | **18 183** |
| CPO | Open'g stock | 5 213 | 4 750 | 4 993 | 5 770 | **20 726** |
| | Production | 7 859 | 9 371 | 10 184 | 9 720 | **37 134** |
| | Imports | 6 330 | 7 168 | 7 709 | 7 941 | **29 148** |
| | Exports | 6 351 | 7 373 | 7 548 | 8 728 | **30 000** |
| | Ending stocks | 4 750 | 4 993 | 5 700 | 5 327 | **20 770** |
| | Disappear | 8 301 | 8 922 | 9 640 | 9 305 | **36 168** |
| SFO | Open'g stock | 1 144 | 1 390 | 1 419 | 1 041 | **4 994** |
| | Production | 2 945 | 2 854 | 2 164 | 3 163 | **11 126** |
| | Imports | 1 059 | 1 297 | 1 039 | 962 | **4 357** |
| | Exports | 1 139 | 1 399 | 888 | 1 039 | **4 465** |
| | Ending stocks | 1 390 | 1 419 | 1 041 | 1 249 | **5 099** |
| | Disappear | 2 620 | 2 724 | 2 693 | 2 878 | **10 915** |
| 17 oils and fats (grand total) | Open'g stock | 16 053 | 17 095 | 17 232 | 16 824 | **67 204** |
| | Production | 36 482 | 37 303 | 36 639 | 39 558 | **149 982** |
| | Imports | 12 833 | 14 000 | 14 751 | 14 868 | **56 452** |
| | Exports | 12 618 | 14 344 | 14 462 | 15 935 | **57 359** |
| | Ending stocks | 17 095 | 17 232 | 16 824 | 17 050 | **68 201** |
| | Disappear | 35 655 | 36 822 | 37 336 | 38 266 | **148 079** |

WORLD BALANCE IN OILS AND FATS (continued)

| Oil | Year | 2007 | | | | |
|---|---|---|---|---|---|---|
| | Quarter | Q1 Jan/Mar | Q2 Apr/Jun | Q3 Jul/Sep | Q4 Oct/Dec | Total |
| SBO | Open'g stock | 3 937 | 3 976 | 4 201 | 3 983 | **16 097** |
| | Production | 8 683 | 9 460 | 9 389 | 9 941 | **37 473** |
| | Imports | 2 159 | 2 745 | 3 291 | 2 792 | **10 987** |
| | Exports | 1 949 | 2 826 | 3 242 | 3 071 | **11 088** |
| | Ending stocks | 3 976 | 4 201 | 3 983 | 3 903 | **16 063** |
| | Disappear | 8 854 | 9 155 | 9 656 | 9 742 | **37 407** |
| RSO | Open'g stock | 1 399 | 1 387 | 1 309 | 1 133 | **5 228** |
| | Production | 4 524 | 4 444 | 4 550 | 4 923 | **18 441** |
| | Imports | 627 | 466 | 525 | 631 | **2 249** |
| | Exports | 487 | 504 | 551 | 629 | **2 171** |
| | Ending stocks | 1 387 | 1 309 | 1 133 | 1 110 | **4 939** |
| | Disappear | 4 676 | 4 483 | 4 700 | 4 949 | **18 808** |
| CPO | Open'g stock | 5 327 | 4 666 | 4 553 | 5 133 | **19 679** |
| | Production | 8 127 | 9 100 | 10 436 | 10 296 | **37 959** |
| | Imports | 6 801 | 7 295 | 7 683 | 8 305 | **30 084** |
| | Exports | 6 313 | 7 172 | 7 706 | 8 552 | **29 743** |
| | Ending stocks | 4 666 | 4 553 | 5 133 | 5 251 | **19 603** |
| | Disappear | 9 276 | 9 337 | 9 832 | 9 932 | **38 377** |
| SFO | Open'g stock | 1 249 | 1 400 | 1 248 | 907 | **4 804** |
| | Production | 3 097 | 2 828 | 2 136 | 2 786 | **10 847** |
| | Imports | 1 065 | 1 302 | 916 | 824 | **4 107** |
| | Exports | 1 127 | 1 350 | 722 | 857 | **4 056** |
| | Ending stocks | 1 400 | 1 248 | 907 | 1 154 | **4 709** |
| | Disappear | 2 884 | 2 932 | 2 672 | 2 506 | **10 994** |
| 17 oils and fats (grand total) | Open'g stock | 17 050 | 17 774 | 16 750 | 15 652 | **67 226** |
| | Production | 37 501 | 37 334 | 37 600 | 41 066 | **153 501** |
| | Imports | 13 189 | 14 441 | 15 137 | 15 238 | **58 005** |
| | Exports | 12 224 | 14 615 | 14 931 | 15 859 | **57 629** |
| | Ending stocks | 17 774 | 16 750 | 15 652 | 16 458 | **66 634** |
| | Disappear | 37 741 | 38 183 | 38 904 | 39 639 | **154 467** |

Source: Oil World (Monthly, 2007).