IMPACT OF EL NINO ON GLOBAL PALM OIL PRODUCTION
- A KEY CATALYST FOR PRICE RECOVERY?

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ABSTRACT

Weather is one of the key drivers in the production and supply of almost of all oilseeds and palm oil and a major catalyst for price movement. Not too long ago, towards the end of Q1 of 2014, there were growing evidence and concerns on the emergence of an El Nino which could potentially alter the supply equation of oilseeds and palm oil. These concerns have led to a temporary spike in palm oil prices in March 2014. The seriousness of this situation did not play out as envisaged as the threat of a full blown El Nino did not materialize. However, El Nino-like conditions continued to persist through into early 2015 and resulted in some non El Nino droughts in parts of Indonesia and Malaysia.

In May 2015, the main El Nino monitoring agencies like the Australian Bureau of Meteorology (BOM) and US National Oceanographic and Atmospheric Administration (NOAA) officially declared the presence of El Nino conditions in the central Pacific region. All international climate models suggest a 95% chance that the El Niño will persist until at least the end of 2015. Models also indicate that further warming is likely to extend into Q2 2016. El Nino usually results in drier and below average rainfall or prolonged droughts in the key palm oil producing countries like Indonesia, Malaysia and Thailand (which account for some 90% of the world’s production).

The effects of adverse weather conditions especially rainfall in recent years on palm oil yield and supply were analyzed (using the Ganling’s weather-based forecasting model).

How will this newly confirmed El Nino event affect palm oil and oilseed production in the coming months? What will be its likely impact on global palm oil supply should it develop into a severe El Nino like the 1997/98 event? Will this El Nino provide the necessary catalyst for a price recovery in 2016?
Key highlights of our analysis are summarized as follows:

- The 2015 El Nino has been confirmed and there is a strong possibility that it could develop into a severe El Nino.
- A strong El Nino of the magnitude that of the 1997/98 would be catastrophic and likely to cause major disruption to global supply of palm oil and possibly oilseeds in 2016.
- Global palm oil supply will see a reduced growth of 1.4 million tonnes in 2015 and a negative growth of 1.1 million tonnes in 2016 with a strong El Nino – not likely to meet normal demand growth of 3.0 million tonnes.
- A strong El Nino is likely to provide a major catalyst for price recovery in 2016.
- Ample global soybean supply may dampen any significant price recovery unless the evolving strong El Nino also affect oilseed supply in the coming season – point to watch.
- Full implementation of the biodiesel mandates in Indonesia should be supportive of price recovery.
- We are unlikely to see any significant price recovery for the rest of 2015. The earliest for prices to recover will probably be toward the end of Q1 or Q2 2016 when the full impact of the El Nino on palm oil supply and oilseeds start to bite.
IMPACT OF EL NINO ON GLOBAL PALM OIL SUPPLY: A CATALYST FOR PRICE RECOVERY?

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PRESENTATION OUTLINE

1. Impact of weather phenomena on agricultural production
2. Re-emergence of El Nino in 2015
3. Will the evolving El Nino again disrupt global palm oil supply?
4. Palm oil supply scenarios in 2015 and 2016
5. Palm oil outlook – a case for price recovery in 2016?
IMPACT OF WEATHER PHENOMENA ON AGRICULTURAL PRODUCTION

1. **EL NINO** is a weather phenomenon that occurs in the Equatorial Pacific Ocean every 2-7 years and bring significant weather changes to the neighbouring Asia Pacific countries.

2. It disrupts the normal weather pattern, resulting in warmer and drier conditions in Australia, S.E. Asia (IDN & M’SIA), India, East Africa and excessive rainfall along the West coast of South America (Peru and Colombia), can also bring more rains to Argentina and dryness to parts of North America.

3. The 1997/98 El Nino was the most severe in the 20th century and affected many countries worldwide and brought severe water shortage and devastating crop failure.

4. The last El Nino was in 2009/10, some 5 years ago, and disrupted crop production worldwide.

HOW ADVERSE WEATHER CONDITIONS AFFECT PALM OIL PRODUCTION?

- Weather is one of the key drivers in the supply equation of palm oil & oilseeds
- Influence on short-term supply outlook
- Major catalyst for price movement
IMPACT OF DRY WEATHER ON PALM OIL PRODUCTION

PROLONGED DRY WEATHER OR EL NINO-INDUCED DROUGHT

➢ 8-20 WEEKS OF LOW RAINFALL OR DROUGHT CAN INDUCE MOISTURE STRESS AND AFFECT SUBSEQUENT YIELD
➢ MULTIPLE LAGGED EFFECTS: 4-6 MTH (BUNCH FAILURE), 10-12 MTHS (FLORAL ABORTION) AND 22-24 MTHS (SEX DIFFERENTIATION) AFTER ITS OCCURRENCE
➢ IMPACT ON PRODUCTION: MAY REDUCE YIELD UP TO 30% NORMAL DEPENDING ON THE SEVERITY OF THE DROUGHT

EFFECTS OF LOW OR DELAYED RAINFALL ON OILSEEDS ARE MORE IMMEDIATE – USUALLY WITHIN 6 MONTHS

IMPACT OF WET WEATHER ON PALM OIL PRODUCTION

PROLONGED WET WEATHER OR LA NINA-INDUCED RAINS

➢ 8-16 WEEKS OF HIGH OR EXCESSIVE RAINFALL OR FLOODING
➢ EFFECTS ON PRODUCTION: DIRECT CROP LOSSES DUE TO DISRUPTION OF HARVESTING AND LOGISTICS, 5-6 MTHS (FRUIT-SET) AND 9-12 MTHS (FLORAL ABORTION) AFTER ITS OCCURRENCE
➢ IMPACT ON PRODUCTION: MAY REDUCE YIELD UP TO 15% NORMAL IN SEVERE LA NINA

LAGGED EFFECTS OF ADVERSE WEATHER ALLOW THE DEVELOPMENT OF A WEATHER-BASED PALM OIL FORECASTING MODEL (LING, 1978)
EVOLUTION AND DECLARATION OF THE 2015 EL NINO

- Not too long ago, towards the end of Q1 of 2014, there were growing evidence and concern on the emergence of an El Nino which could potentially alter the supply equation of oilseeds and palm oil.
- This concern has led to a temporary spike in palm oil prices in March 2014. The seriousness of this situation did not play out as envisaged as the threat of a full blown El Nino did not materialize. However, El Nino-like conditions continue to persist through into early 2015.
- In May 2015, the key El Nino monitoring agencies (BOM and NOAA-CPC) confirmed the presence of El Nino conditions in the tropical central Pacific region.
- How will this newly confirmed El Nino event affect palm oil and oilseed production in the coming months?

A ‘STRONG’ EL NINO IN THE MAKING?

➢ 2015 EL NINO IS NOW WELL ESTABLISHED AND CONTINUE TO STRENGTHEN

➢ PROBABILITIES OF THE CURRENT EL NINO CONTINUING INTO Q2 2016 IS NOW 80-90% ➢ ALL MULTI-MODEL AVERAGES SUGGEST THAT NINO 3.4 MAY REACH ABOVE +2.0 C IN Q4 OF 2015 – PREDICT ‘STRONG’ EL NINO ➢ WILL IT DEVELOP INTO A STRONG ONE LIKE THE 1997/98 EL NINO?
EARLY SIGNS OF DRYNESS IN S.E. ASIA – SUGGESTING EL NINO IS UNDERWAY

Below average and inadequate rainfall in key oil palm growing areas in Indonesia and Malaysia in 2015 H1

PROLONGED DRY WEATHER (2ND HALF 2014) IN PARTS OF SUMATRA AND KALIMANTAN - to impact palm oil supply in 2015 & 2016

- VERY DRY SOIL CONDITIONS IN SOUTH & EAST KALIMANTAN
- MULTIPLE UNOPENED SPEARS IN CENTRAL, EAST AND SOUTH KALIMANTAN ESTATES
- PREDOMINANT MALE FLOWERS IN SOUTH KALIMANTAN - LOWER CROP IN Q1 2015
BELOW AVERAGE RAINFALL IN KEY OIL PALM AREAS IN MALAYSIA IN 2014 & 2015

BELOW AVERAGE AND INADEQUATE RAINFALL IN THE 1ST HALF 2015 - TO IMPACT PRODUCTION IN 2016

RECENT HOT AND DRY WEATHER IN KEY OIL PALM STATES IN MALAYSIA TO IMPACT PRODUCTION IN 2016

- BELOW AVERAGE AND LOW RAINFALL IN JOHOR, PAHANG AND SABAH IN 1ST HALF 2015
- VERY DRY SOIL CONDITIONS AND SEVERE WATER STRESS ON PALMS
- MULTIPLE UNOPENED SPEARS (UP TO 6) IN SABAH AND PEN. MALAYSIA
A STRONG EL NINO IN 2015 TO DISRUPT GLOBAL PALM OIL SUPPLY?

EL NINO CAN RESULT IN YIELD DECLINE: 2-23%

2009/10 EL NINO (MODERATE):
YIELD: -6% (Y-O-Y)
CPO PRODUCTION: -3.9% (Y-O-Y)

1997/98 EL NINO (STRONG):
YIELD: -16% (Y-O-Y)
CPO PRODUCTION: -9.8% (Y-O-Y)

A STRONG 2015/16 EL NINO OF THE 1997/98 MAGNITUDE IS LIKELY TO CAUSE A MAJOR SUPPLY DISRUPTION TO PALM OIL

IMPACT OF EL NINO ON OILSEEDS

➢ In the 2004 and 2009 El Nino, India faced severe drought as monsoons were below normal by 13% and 22% respectively.
➢ In all of the three El Nino years in the last decade, deficient rainfall had impacted oilseed production and thereby vegetable oil imports.
➢ El Nino will curb this year’s monsoon rains to 88 percent of average - the first back-to-back shortfall in three decades - according to the India Meteorological Department.
➢ Lower oilseed harvests will increase India’s dependence on palm and soybean oil imports.
➢ Recent hot and dry weather in Canada and EU have affected rapeseed production and supply.
PALM OIL SUPPLY OUTLOOK 2015/16
- under various El Nino scenarios

Based on Ganling’s Weather Based Palm Oil Forecasting Model

Indonesian CPO Output and Forecast Under Various Weather Scenarios:
- Normal
- No El Nino
- With El Nino

Malaysian CPO Production and Forecasts Under Various Weather Scenarios:
- Normal
- No El Nino
- With El Nino

Palm Oil Supply Outlook 2015/16

<table>
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<tr>
<th>CPD Forecast</th>
<th>2013</th>
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<td>YOY %</td>
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<td>Malaysia</td>
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<td>Moderate El Nino</td>
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<tr>
<td>Strong El Nino</td>
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<td>19.67</td>
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<td>YOY %</td>
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<td>Global Total</td>
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<td>YOY %</td>
<td>5.6</td>
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<td>-1.8</td>
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Source: Ganling 2015

- DUE TO NON-EL NINO DRY WEATHER IN THE PREVIOUS 24 MONTHS GLOBAL PALM OIL SUPPLY WILL GROW ONLY BY 1.4 MN T (62.2 MN T) IN 2015
- A STRONG EL NINO IN 2015 WILL REDUCE INDONESIA OUTPUT BY -1.2 MN T (31.9 MN T) AND M’SIA BY -0.4 MN T (18.9 MN T) IN 2016
- GLOBAL SUPPLY IS ESTIMATED TO SHRINK BY -1.1 MN T (61.1 MN T) IN 2016 INSTEAD OF A NORMAL GROWTH OF 3.1 MN T
- 1ST NEGATIVE PRODUCTION GROWTH IN DECADE
PALM OIL OUTLOOK FOR 2015/16 - a case for price recovery?

PALM OIL PRICES - downtrend since Q3 2012

- Prices are cyclical – 4 high & 5 low since 1990
- Cycles largely driven by major weather events and supply
- High price cycle from 2010-12
- Current low prices due to: massive planting, good supply growth, slower demand, crash in crude oil prices in mid-2014
IMPACT OF EL NINO ON PALM OIL PRICES

- El Nino event is usually followed by a spike in palm oil prices (up 15% to 125%) due to disruption of supply.
- Prices increase by 70% to peak at RM 3962/T (USD 1228) in February 2011 after the last 2009/10 El Nino.
- A strong El Nino emerging by Q4 2015 likely to provide a major catalyst for price recovery in 2016/17.

AMPLE GLOBAL SOYBEAN SUPPLY MAY DAMPEN PRICE RECOVERY UNLESS.......

- Present SBO premium over CPO is USD 113 - slightly below the 10-year average of USD123/T.
- SBO premium narrows and may sometime drop below CPO prices during periods of tight palm oil supply (like El Nino) - no apparent yet.
- Weak SBO prices and normal SBO-CPO premium indicate ample soybean supply.

The extent of price recovery will also have to depend on the impact of the current El Nino on oilseed production in the coming season.
DOMESTIC BIODIESEL MANDATES IN INDONESIA - CATALYST FOR PRICE RECOVERY?

<table>
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<th>TABLE 2: INDONESIA BIODIESEL MANDATE AND DEMAND PROJECTION</th>
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<tr>
<td>YEAR</td>
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<td>BIOFUEL REQUIRED</td>
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<tr>
<td>CPO REQUIRED FOR BIODESEL</td>
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<tr>
<td>BIODIESEL DEMAND (% of CPO)</td>
</tr>
</tbody>
</table>

Supportive Measures from Indonesian Govt:
- New export levy to help fund the biodiesel subsidy - USD 50/MT for CPO and USD 20/MT for RBDPO
- Mandatory blending being raised to B15 for 2015 and B20 for 2016

Indonesian and Malaysian mandates to soak up an estimated 8.2 MT of CPO in 2016 (if implemented fully)

Increase in domestic biodiesel usage will limit availability for export

Supportive of price recovery

CONCLUDING REMARKS

- The 2015 El Nino has been confirmed and is predicted to be developing into a severe one.
- A strong El Nino of the magnitude that of the 1997/98 will be catastrophic and can cause major disruption to global supply of palm oil and possibly oilseeds in 2016.
- Global palm oil supply will see a growth of only 1.4 MT in 2015 and a negative growth of -1.1 MT in 2016 - not likely to meet normal demand growth.
- A strong El Nino is likely to provide a major catalyst for price recovery in 2016.
- Ample soybean supply may dampen significant price recovery unless the strong El Nino also affect oilseed supply in the coming season.
- Full implementation of the biodiesel mandate in Indonesia would be supportive of price recovery.
- Unlikely to see significant price recovery for the rest of 2015. Earliest for price recovery will be from Q1 or Q2 2016 onward when the impact of the strong El Nino start to bite.
Thank you

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Details of these forecasts can be obtained from "OIL PALM ANNUAL REPORT 2015 - INDONESIA & MALAYSIA" LMC INTERNATIONAL (in association with Ganling Sdn Bhd)

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