Tackling GHG target challenges – a company perspective

Haskarlianus Pasang

ISCC Stakeholder Meeting Southeast Asia
06 December 2016, Penang (Malaysia)
1999: Listed on the Singapore Stock Exchange

The largest palm oil companies in Indonesia (167 plantations)

Revenue: more than USD 6.5 Billion

Core net profit: USD 221 Million

Total Production: 2.38 Million tonnes of crude palm oil (CPO) dan 586,000 tonnes of palm kernel (PK)

- From 44 Mills with a total annual capacity of 12.21 Million tonnes

Source: GAR Sustainability Report 2015
The Oil Palm Supply Chain

**Introduction**
GAR’s Target and Effort
Opportunities and challenges
Lessons learned

**About GAR**
GAR’s emissions mitigation target and efforts
GAR’s GHG Emission Trend

**The Oil Palm Supply Chain**

- **PLANTATION: INPUT**
- **TRADER/ BROKER OF FFB**
- **MILL: CPO & PKO PRODUCTS**
- **REFINERY**
- **BUYER/ IMPORTER**
- **MANUFACTURER/ PROCESSOR**
- **DISTRIBUTION/ MARKETING CUSTOMER**

<table>
<thead>
<tr>
<th>PLANTATION: 40-143 Kg CO2eq/tFFB</th>
<th>MILL: 351.65 – 1363.5 Kg CO2eq/tCPO</th>
<th>REFINERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.05%</td>
<td>3.15%</td>
<td>Waste water</td>
</tr>
<tr>
<td>0.31%</td>
<td>0.13%</td>
<td>Biomass Power Generation</td>
</tr>
<tr>
<td>Composting</td>
<td>Conservation Area</td>
<td>Water Treatment Chemicals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Waste Utilization</td>
</tr>
</tbody>
</table>

**Transportation Fuel**
GAR's GHG Emission Trend
2012 – 2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Average GHG Value (kgCO2eq/ton CPO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>1,111</td>
</tr>
<tr>
<td>2013</td>
<td>1,101</td>
</tr>
<tr>
<td>2014</td>
<td>865</td>
</tr>
<tr>
<td>2015</td>
<td>718</td>
</tr>
<tr>
<td>2016</td>
<td>661</td>
</tr>
</tbody>
</table>

Source: Internal Analysis, 2016
<table>
<thead>
<tr>
<th></th>
<th>Seed Production</th>
<th>Nursery</th>
<th>Estate</th>
<th>Mill</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ISCC</strong></td>
<td>-</td>
<td>-</td>
<td>40 - 143 kg CO2eq/tFFB</td>
<td>351 - 1363 kg CO2eq/tCPO</td>
</tr>
<tr>
<td><strong>RSPO</strong></td>
<td>-</td>
<td>-</td>
<td>50 - 230 kg CO2eq/tFFB</td>
<td>230 - 3990 kg CO2eq/tCPO</td>
</tr>
<tr>
<td><strong>Carbon Footprint</strong></td>
<td>0.0074 kg CO2eq/Germinated Seed</td>
<td>2 - 3 kg CO2eq/Seedling</td>
<td>103 - 106 kg CO2eq/Tffb</td>
<td>848 - 907 kg CO2eq/tCPO</td>
</tr>
<tr>
<td><strong>Assessment - with Life Cycle Inventory Perspective</strong></td>
<td>2</td>
<td>3 kg CO2eq/Seedling</td>
<td>106 kg CO2eq/Tffb</td>
<td>907 kg CO2eq/tCPO</td>
</tr>
</tbody>
</table>
The GAR Social and Environmental Policy (GSEP) is our updated and enhanced sustainability policy. The GSEP integrates and builds on the principles in our previous sustainability policies.

GAR launched its updated policy in September 2015.

- **Environmental Management**: No development on Peatlands, HCV, and HCS area as well as improving yields to reduce pressure on new land development.
- **Social and Community Engagement**: Positive economic, social and community development for indigenous people and local communities.
- **Work Environment and Industrial Relations**: Recognizing, respecting, and strengthening the rights of all our workers.
- **Marketplace & Supply Chain**: Traceable and transparent supply chains.

**Introduction**

- GAR’s Target and Effort
- Opportunities and challenges
- Lessons learned

**Our GHG Emission**

- Our GHG Target
- Our Reduction Efforts

**GSEP**

- Our GHG Target
- Support Govt. Policy
Support Indonesian Govt. Program

- 26% reduction of GHG emission by 2020
- 41% reduction of GHG emission by the end of 2030 through the support of international cooperations

GAR Internal Target

- Meeting our GSEP commitment (inc. traceable to plantation by 2017 and by 2020 of 3rd party supplier)
- Reduce GHG emission progressively in all operations

International Market Demand

- The new amendment RED
- Buyer special requirements
- Collaborate with business at the end of supply chain
Supporting Government Policy and Commitment

26% Reduction of GHG by 2020 (Unconditional)

GAR/SMART Biogas Masterplan to build Methane Capture Facility in its 21 Mills.

41% Reduction of GHG by the end of 2030 through the support of international cooperations (Conditional)

Reduce the GHG Emission to 2.88 Million tCO2eq or equal to 18% of GHG reduction in 2020.

GAR/SMART Projection on Emission Reduction by 2020

<table>
<thead>
<tr>
<th>2015 - 2020</th>
<th>Total Emission (tCO2e)</th>
<th>Total Saving Emission (tCO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emission - FAIR Scenario</td>
<td>14.824.784</td>
<td>-2.884.198</td>
</tr>
</tbody>
</table>

FAIR: Mills with MC facility according to GAR/SMART Biogas Masterplan.

Source: Internal Analysis, 2015
Mill with Methane Capture Facility

<table>
<thead>
<tr>
<th>Emission (kgCO2eq/tCPO)</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emission from POME</td>
<td>202.5</td>
<td>154.9</td>
<td>120.5</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Emission from Mill</td>
<td>11.1</td>
<td>7.7</td>
<td>3.8</td>
<td>6.4</td>
<td>4.5</td>
</tr>
<tr>
<td>Activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emission from Estate</td>
<td>547.7</td>
<td>630.4</td>
<td>339.9</td>
<td>321.3</td>
<td>348.7</td>
</tr>
<tr>
<td>(highest)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emission from</td>
<td>28.6</td>
<td>23.8</td>
<td>26.0</td>
<td>24.0</td>
<td>25.4</td>
</tr>
<tr>
<td>Transportation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Emission to be</td>
<td>790.0</td>
<td>816.8</td>
<td>490.1</td>
<td>351.7</td>
<td>378.6</td>
</tr>
</tbody>
</table>
## Introduction

This section introduces the topic and sets the context for the following sections.

### GAR’s Target and Effort

The goal and efforts undertaken by GAR to achieve their targets.

### Opportunities and Challenges

A discussion on the opportunities and challenges faced during the efforts.

### Lessons learned

Insights gained from the efforts and their implications.

## Our GHG Emission

### Our Target

The target set by GAR for their GHG emissions.

### Our Reduction Efforts

The strategies and actions taken to reduce GHG emissions.

### Methane Capture

Strategies for capturing methane, including co-composting.

### On-going GHG - Reduction Efforts

Continuous efforts to reduce GHG emissions.

### Support

Support mechanisms and approaches adopted to facilitate the reduction efforts.

### Reduce Chemical Fertilizer

Efforts to reduce chemical fertilizer usage.

## Mill with Co-composting Facility

### Low GHG Emission Product

A product with a low GHG emission profile.

### Composting with fresh POME

Composting with fresh POME as a GHG reduction strategy.

### Support Zero Waste Approach

Adoption of a zero waste approach to support reduction efforts.

### Reduce chemical fertilizer

Reduction of chemical fertilizer usage as a part of the efforts.

## Table: Emission Calculation

<table>
<thead>
<tr>
<th>Emission from POME (kgCO2eq/tCPO)</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emission from Mill Activities</td>
<td>20.5</td>
<td>19.7</td>
<td>22.1</td>
<td>23.9</td>
</tr>
<tr>
<td>Emission from Estate (highest)</td>
<td>586.1</td>
<td>491.1</td>
<td>331.5</td>
<td>358.5</td>
</tr>
<tr>
<td>Emission from Transportation</td>
<td>23.8</td>
<td>24.2</td>
<td>24.2</td>
<td>24.1</td>
</tr>
<tr>
<td>Total Emission to be declared</td>
<td>1083.0</td>
<td>556.2</td>
<td>563.7</td>
<td>429.1</td>
</tr>
</tbody>
</table>

### Calculation without co-composting vs. Calculation with co-composting

The table shows the calculation of emissions with and without co-composting.
GSEP Commitment

Traceability to mill (2017) and plantation (2020)

No planting on peat, HCV, HCS

Reduce LUC and increase sequestration

LCA project

Measure GHG from cradle to gate, including nature conservation

Water footprint

Mapping water stress & further reduce water consumption (collaboration with stakeholders)

Precision fertilizer application

Reduce N₂O emissions by implementing precision fertilizer application

Desa Sejahtera Siaga Api

Land preparation without burning by community
Life Cycle Assessment Project. Carbon Footprint Assessment Project with Life Cycle Perspective
Participatory Mapping & Participatory Conservation Planning

**Objectives:**
Conserving High Conservation Value (HCV) and High Carbon Stock (HCS) forests in a participative manner involving communities.

**Targeted Outcome:**
Provide a better understanding to the stakeholders through landscape approach with a main purpose of reducing land preparation/opening.

**Future Improvement:**
To set a standard on measuring/calculating the actual emission reduced from the project.

**Collaborators:**
Local government, local communities, NGOs and consultants

Draft land use map in and around PT. PGM
Desa Sejahtera Siaga Api (DSSA) educates local community to be alert about the danger of irresponsible *slash-and-burn* practice for land clearance.

**Objective:**
- To help the creation of community level organization
- To establish an internal fire emergency response unit.

**Targeted Outcome:**
- Reduce or eliminate the possibility of forest fire due to land clearance activity.

The program is designed to facilitate the communities to learn about land cultivation in economic and ecological approach.

**Objective:**
- To facilitate the communities to learn about land cultivation in economic and ecological approach.
- To facilitate the Initiation of an organic farmer groups of Nanga Bian Village.

**Targeted Outcome:**
- Reduce conflict and also increases productivity of the land and plantations.
- To mitigate sporadic burning by villagers, community agro-forestry in and around the plantation sites could be organized.
1. GHG is a direct and indirect consequence of natural resources related activities; it could be managed by clear commitment & better planning, and optimize the ready to use technology (even still expensive!)

2. Two methods to tap a low hanging fruit of GHG reduction: Methane capture (covered lagoon and tank system) and Methane Avoidance (co-composting)

3. Further reduction could be made:
   - **LCA** – from cradle to gate
   - **Water footprint** – in collaboration with stakeholder
   - Avoid new planting on **peat, HCS, HCV area**
   - **Precision fertilizer** application
   - Work with community to **prevent fire**
THANK YOU