Potential for Waste-to-Energy in Malaysia
Focus: Biomass

Presented by:
Dato’ Leong Kin Mun
President, Malaysia Biomass Industries Confederation (MBIC)
1. The Malaysia Biomass Industries Confederation (MBIC)
2. Review of the Biomass Industry in Malaysia
3. Business Opportunities for German Companies in the Malaysia’s Bioenergy Sector
   A. Feedstock Represents Bioenergy
   B. Government Incentives – FiT & Tax Holiday
   C. Grant for Technology Acquisition
   D. Fuel Switching / Biogas Potential Technology Providers
5. Foreign Technology Partnerships with Malaysia & Important Stakeholders
6. SWOT Analysis on German Collaboration with Malaysian Biomass Sector
7. Take Home Points
THE MALAYSIA BIOMASS INDUSTRIES CONFEDERATION (MBIC)

• Formed in 2012 as legacy of the EU-Malaysia Biomass Sustainable Production Initiative (Biomass-SP), a development cooperation programme between the European Union (EU) and the Malaysian Government (2010 – 2013)
MBIC Aims & Objectives

• To promote application of the principles of sustainable consumption and production among members towards climate change mitigation efforts.

• To promote the growth of the biomass industry jointly with the government, stakeholders and relevant parties.

• To provide effective and interactive framework for international co-operation and consultation in all issues relating to the biomass industry.
Review of the Biomass Industry in Malaysia
What is Biomass?

- CANE BAGASSE
- RICE HUSKS
- COCONUT HUSKS
- CORN STOVERS
- WOOD
- MUNICIPAL WASTE
- EMPTY FRUIT BUNCH
- PALM KERNEL SHELL (PKS)
- OIL PALM TRUNKS (OPT)
- KENAF
- Palm Oil Mill Effluent (POME)
- MANURE
Feedstock Currently Underutilised

- **Oil Palm Fronds**: 16.4 mil dry tonnes
- **Oil Palm Trunks**: 4.5 mil dry tonnes
- **Empty Fruit Bunches**: 2.3 mil dry tonnes

**Value Adding Opportunities**

**Downstream Opportunities**

- Bioethanol
- Biochemicals
- Biofuels
- Pellets
- Furniture from Oil Palm Lumber
- Wood Plastic Composite
- Plywood
- Particle Board / Moulded Particle Board
- MDF
- Pulp & paper
- Finished Paper Product
- Compost
- Fibre
- Animal Feed from Oil Palm Fronds

Current focus: Biorefinery, Biofuels, Biochemicals, Biopellets
The Biomass Value Chain

Bioenergy
- Biofuels
- Biomass power plant
- Biogas
- Pellets, briquettes

Bio Agriculture
- Biofertiliser
- Animal feed
- Composting
- Aqua-feed

Eco-products
- Pulp and paper
- Biocomposite
- Biopackaging
- Activated Carbon
- Bio-engineering

Biochemical
- Biosugar
- Lactic acid
- Polylactic acid
- Food additives
- Zeolite & catalyst

Value

Time
Business Opportunities for German Companies in Malaysia’s Bioenergy Sector
A. Feedstock Represents Bioenergy
B. Government Incentives – FiT & Tax Holiday
C. Grant for Technology Acquisition
D. Fuel Switching / Biogas (Potential Technology Providers)
A. Feedstock Represents Bioenergy

- Oil palm sector the largest contributor to the production of biomass in the country → Empty Fruit Bunches (EFB), Palm Kernel Shell (PKS), Fibres, and Palm Oil Mill Effluent (POME).

- There is availability for oil palm biomass, but feedstock procurement will depend largely on local knowledge and art of negotiation!
## A. Feedstock Represents Bioenergy

<table>
<thead>
<tr>
<th>No.</th>
<th>Biomass</th>
<th>Amount (dry weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>OPF (from pruning activity) OPF (from replanting activity)</td>
<td>42.21 million tonnes 3.28 million tonnes</td>
</tr>
<tr>
<td>2.</td>
<td>OPT (~5% replanting rate)</td>
<td>33,299,000 trunks 17.5 million tonnes</td>
</tr>
<tr>
<td>3.</td>
<td>From the 421 palm oil mills operating at total capacity of 97.40 million tonnes of FFB, ~ Estimated EFB = 22% x 92 million tonnes</td>
<td>21.34 million tonnes</td>
</tr>
<tr>
<td>4.</td>
<td>Mesocarp fibers</td>
<td>7.73 million tonnes</td>
</tr>
<tr>
<td>5.</td>
<td>Palm kernel shells</td>
<td>4.46 million tonnes</td>
</tr>
<tr>
<td>6.</td>
<td>POME generated from per tone of FFB is about 67%.</td>
<td>62 million tonnes **                ** (million M³)</td>
</tr>
</tbody>
</table>

Source: MPOB
## Bioresourses for RE Generation in Malaysia

<table>
<thead>
<tr>
<th>Bio-Energy Products</th>
<th>Sources</th>
<th>Technological Process</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Biogas Fuel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Biogas</td>
<td>Wet solids / Liquid wastes such as manure, food waste, WAS, etc</td>
<td>Anaerobic Digestion</td>
</tr>
<tr>
<td>b. Syngas</td>
<td>Dry solids biomass such as wood chip, EFB, MSW, etc</td>
<td>Pyrolysis, Gassification</td>
</tr>
<tr>
<td><strong>2. Liquid Fuel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Bio-ethanol</td>
<td>Cellulosic plant wastes such as sago waste, paper waste, etc</td>
<td>Enzymatic Pre-treatment, Ethanol Fermentation</td>
</tr>
<tr>
<td>b. Bio-diesel</td>
<td>Liquefied oil /fat wastes such as oil sludge, cooking oil, etc</td>
<td>Esterification, Pyrolysis</td>
</tr>
<tr>
<td><strong>3. Solids Fuel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Pellet / briquette</td>
<td>Dry Fibrous agricultural wastes such as EFB, Wood chip, saw dust, etc</td>
<td>Hammering, baling / palletizing</td>
</tr>
<tr>
<td>b. Bio-char</td>
<td>Dry Fibrous agricultural wastes such as EFB, Wood chip, saw dust, etc</td>
<td>Pyrolysis</td>
</tr>
</tbody>
</table>

* Biorefinery still at infancy stage in Malaysia
Waste-to-Energy Projects

- **Biomass/Biogas Power Plants**
  - Feedstock: Oil Palm Biomass, Agricultural & Municipal Solid Waste
  - For Peninsular Malaysia and Sabah, Feed-in-Tariff (FiT) rates available for RE generation from biomass
## Government Incentives – FiT

### Feed-in-Tariff (FiT) for Renewable Energy

<table>
<thead>
<tr>
<th>No.</th>
<th>Renewable Resources</th>
<th>No of Applications</th>
<th>% of total</th>
<th>Capacity (MW)</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Biogas</td>
<td>68</td>
<td>1.47%</td>
<td>111.69</td>
<td>11.98%</td>
</tr>
<tr>
<td>2</td>
<td>Biomass</td>
<td>31</td>
<td>0.67%</td>
<td>303.79</td>
<td>32.57%</td>
</tr>
<tr>
<td>3</td>
<td>Small Hydro</td>
<td>34</td>
<td>0.73%</td>
<td>264.84</td>
<td>28.40%</td>
</tr>
<tr>
<td>4</td>
<td>Solar PV</td>
<td>4,498</td>
<td>97.13%</td>
<td>252.29</td>
<td>27.05%</td>
</tr>
<tr>
<td></td>
<td>Individuals</td>
<td>4,065</td>
<td>87.78%</td>
<td>40.15</td>
<td>4.31%</td>
</tr>
<tr>
<td></td>
<td>Community</td>
<td>91</td>
<td>1.97%</td>
<td>1.72</td>
<td>0.18%</td>
</tr>
<tr>
<td></td>
<td>Non-individuals (&lt;500 kW)</td>
<td>262</td>
<td>5.66%</td>
<td>43.46</td>
<td>4.66%</td>
</tr>
<tr>
<td></td>
<td>Non-individuals (&gt;500 kW)</td>
<td>80</td>
<td>1.73%</td>
<td>166.95</td>
<td>17.90%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4,631</td>
<td>100.00%</td>
<td>932.60</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

**Source:** SEDA
### Feed-in-Tariff (FiT) Quota for Biomass/Biogas 2015-2017

**BIOENERGY RESOURCE** | QUOTA AVAILABLE (BASED ON COMMERCIAL OPERATIONAL YEAR) as at 2nd February 2015 | | | | **2015** | **2016** | **2017** |
--- | --- | --- | --- | --- | --- | --- | --- |
Biogas | 1.13 | 1.57 | 0 |
Biomass | 0 | 0 | 0 |

**QUOTA AVAILABLE (MW) AS OF 9th February 2015**

<table>
<thead>
<tr>
<th></th>
<th>Biogas</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
Biogas | 5 | 15 | 15 |
Biomass | 0 | 0 | 20 |
Biomass (SW) | 0 | 0 | 2.5 |
# Market & Demand for Bioenergy

<table>
<thead>
<tr>
<th>Biogas Usage</th>
<th>Potential Market</th>
<th>Current Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Power Generation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. National Grid Feed in</td>
<td>SEDA FiT Sales, BOO /BOT investors</td>
<td>Attractive rate but with limited quota, now queuing till Sept 2016</td>
</tr>
<tr>
<td>b. Private consumption</td>
<td>Factory processing Agricultural / food products</td>
<td>Growing demand especially in palm oil sector, due to more lucrative downstream processes.</td>
</tr>
<tr>
<td><strong>2. Direct Fuel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Private consumption</td>
<td>Recycle back to upstream heating processes or for new downstream installation</td>
<td>Boiler fuel, drying EFB fiber &amp; compost, hot water heating.</td>
</tr>
<tr>
<td><strong>3. Compressed CBG / CNG</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Export for factory use or as fuel for vehicles</td>
<td>Potential to replace LPG and diesel</td>
<td>Infancy state, “wait &amp; see” approach</td>
</tr>
</tbody>
</table>
• Tax Incentives for the *Utilisation of Oil Palm Biomass* to produce value-added products and renewable energy:  

*Promoted by Malaysian Investment Development Authority (MIDA)*

I. Pioneer Status

• Income **tax exemption (100% for oil palm biomass, 70% for other biomass such as woody biomass)** of the statutory income for a period of **5 years for new companies** and **10 years for reinvesting companies**.

II. Investment Tax Allowance (ITA)

• **60% allowance on qualifying capital expenditure incurred within 5 years** from the date the first qualifying capital expenditure incurred.

• Can be used to **offset against 100% of statutory income** for each year of assessment
B. Government Incentives – Tax Holiday

Promoted by Malaysian Biotechnology Corporation (BiotechCorp)

III. Bionexus Status

• A special status awarded to qualified international and Malaysian biotechnology companies undertaking value-added biotechnology and/or life sciences activities

• 3 focus areas: Agriculture, Healthcare, Industrial

• Tax Incentives
  - Exemption from tax on 100% statutory income for 5-10 years
  - Concessionary tax rate of 20% on statutory income for 10 years after expiry of tax exemption
  - Exemption of import duty and sales tax on imported raw materials/machinery
  - Double deduction on expenditure for R&D & promotion of exports
C. Grant for Technology Acquisition

- Provided by the Malaysian Investment Development Authority (MIDA)
  - Domestic Investment Strategic Fund (DISF)
    - Accelerate the shift of Malaysian-owned companies in targeted industries to **high value-added, high technology, knowledge-intensive, innovation-based industries**
    - Up to RM10 million for grant disbursement per project
C. Grant for Technology Acquisition

– Scope of 1:1 Matching Grant
  • Training of Malaysians
  • R&D activities & collaboration
  • Obtaining international standards/certification
  • Licensing/purchase of new/high technology
  • Modernisation and upgrading of facilities to undertake manufacturing activities/services for MNCs or Malaysian conglomerate companies
    – Retrofitting for renewable energy eligible

Tapping into the Fund: Work with Eligible Malaysian Companies as JV Partner!
C. Grant for Technology Acquisition

- Other Incentives
  - 100% foreign equity
  - No restriction on repatriation of profits & dividend
  - Liberal expatriate posts

Figure 1: Promoted activities under Promotion of Investment Act 1986
D. Fuel–Switching/Biogas

Fuel-switching by industries (heavy industries / SMEs)

– Development of new technologies to utilise biomass in substitution of fossil fuels for commercial manufacturing processes
  
  • Lafarge Malayan Cement Berhad - substitute fossil fuels with Palm Kernel Shells (PKS) from the oil palm industry in its cement manufacturing process in Malaysia.
  
  • Titi Glove Sdn. Bhd. - installed Biomass thermal oil heaters that utilises PKS, rice husks and woody biomass as a renewable energy source
The utilisation of biomass to produce biogas for RE generation in Malaysia is progressing well;

- 46,225MWh total RE generated in 2014 compared to 7,564MWh in 2014
- Harvested mainly from POME, MSW landfills and sewage treatment plants

**Opportunities for Biogas Projects**

- Under Malaysia Economic Transformation Programme, 57 biogas plants have been commissioned within palm oil mills with another 15 mills under development.
- The proposed system involves installing covered type anaerobic digester ponds/tanks to capture the biogas being generated by palm oil mill effluents. The biogas output generated can produce about two megawatts of electricity per mill. (Case Study Felda)
- Opportunities: 354 mills (83%) from 426 mills without any biogas utilisation facilities.

(source: Malaysian Biomass Industry Action Plan 2020)
Palm Oil Mills distribution

5 million hectares

420 mills
Waste-to-Energy Potential
In East Malaysia – Sarawak
Renewable Energy in Sarawak

- Championed by Sarawak Energy Berhad (SEB) in support of the Sarawak Corridor of Renewable Energy (SCORE) under the purview of the Regional Corridor Development Authority (RECODA).

- SEB tasked with harnessing the State’s abundant energy resources which includes wind, solar, hydro, tidal and biomass.
# Biomass for RE Generation in Sarawak

<table>
<thead>
<tr>
<th>Biomass</th>
<th>Production Rate (ton/year)</th>
<th>Moisture Content (%)</th>
<th>Lower Heating Value (kJ/kg)</th>
<th>Energy Available (MJ)</th>
<th>Potential Electricity, 32% efficiency (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Palm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empty Fruit Bunch</td>
<td>2,043,360</td>
<td>60</td>
<td>6,028</td>
<td>1,406,093</td>
<td>125</td>
</tr>
<tr>
<td>Mesocarp Fiber</td>
<td>1,207,440</td>
<td>50</td>
<td>9,134</td>
<td>1,258,991</td>
<td>112</td>
</tr>
<tr>
<td>Shell</td>
<td>510,840</td>
<td>10</td>
<td>18,836</td>
<td>1,098,423</td>
<td>98</td>
</tr>
<tr>
<td>POME</td>
<td>6,037,200</td>
<td>95</td>
<td>22</td>
<td>379,048</td>
<td>40</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>375</strong></td>
</tr>
<tr>
<td>Paddy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rice Husk</td>
<td>51,893</td>
<td>13</td>
<td>13,395</td>
<td>79,351</td>
<td>7</td>
</tr>
<tr>
<td>Rice Straw</td>
<td>259,468</td>
<td>14</td>
<td>16,350</td>
<td>484,281</td>
<td>43</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>50</strong></td>
</tr>
<tr>
<td><strong>OVERALL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>425</strong></td>
</tr>
</tbody>
</table>

*Overall view of electricity potential from selected biomass in Sarawak.*
Oil Palm Biomass In Sarawak

- Sarawak as last frontier for oil palm development in Malaysia
- Annual production of 9,288,000 tons of Fresh Fruit Bunches (FFB) as of 2008
- 1 million hectares planted with oil palm as of 2012, another million hectares can be planted by the year 2020.

<table>
<thead>
<tr>
<th>Products/Residues</th>
<th>Biomass produced Per ton FFB</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFB</td>
<td>225kg</td>
<td>A woody fibrous biomass in units of approx. 65 by 30 cm</td>
</tr>
<tr>
<td>Shell</td>
<td>55kg</td>
<td>A hard, solid biomass with high calorific value. Some used as fuel, some disposed</td>
</tr>
<tr>
<td>Fibre</td>
<td>130kg</td>
<td>A fibrous biomass often used in the palm oil mills for boiler fuel for process steam and electricity</td>
</tr>
<tr>
<td>Palm Oil Mill Effluent (POME)</td>
<td>650kg</td>
<td>A dilute liquid effluent that requires processing prior to discharge to watercourses</td>
</tr>
</tbody>
</table>
Oil Palm Biomass In Sarawak

Number and location of Palm Oil Mills in Sarawak as of 2008.

Source: Sarawak Energy Berhad
## Projection of MW Output from Oil Palm Biomass

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (Ha)</th>
<th>FFB Yield (ton/ha)</th>
<th>FFB Production (ton)</th>
<th>Power Output (MW)</th>
<th>Total Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FFB</td>
<td>Fiber</td>
</tr>
<tr>
<td>2015</td>
<td>1,109,304</td>
<td>23</td>
<td>25,513,992</td>
<td>343</td>
<td>307</td>
</tr>
<tr>
<td>2016</td>
<td>1,220,234</td>
<td>24</td>
<td>29,285,616</td>
<td>394</td>
<td>353</td>
</tr>
<tr>
<td>2017</td>
<td>1,342,257</td>
<td>25</td>
<td>33,556,425</td>
<td>452</td>
<td>404</td>
</tr>
<tr>
<td>2018</td>
<td>1,476,483</td>
<td>26</td>
<td>38,388,558</td>
<td>517</td>
<td>463</td>
</tr>
<tr>
<td>2019</td>
<td>1,624,131</td>
<td>27</td>
<td>43,851,537</td>
<td>590</td>
<td>528</td>
</tr>
<tr>
<td>2020</td>
<td>1,786,544</td>
<td>28</td>
<td>50,023,232</td>
<td>673</td>
<td>603</td>
</tr>
</tbody>
</table>

*Projection of total power output from palm oil biomass until 2020.*

- Projection based on average 10% annual growth in mature planted areas.

Source: Sarawak Energy Berhad
Paddy Residues as Biomass

- Sarawak is 4th largest producer of rice in Malaysia
- Current plans to increase paddy areas in 8 regions around the state to increase paddy production from 2.8 metric tons rice per hectare to 4 metric tons rice per hectare annually
- Translates to procurement of about 70,000 tons rice husks and 350,000 tons paddy straw annually.

<table>
<thead>
<tr>
<th>New / Extend Paddy Field</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limbang Valley</td>
<td>20,000</td>
</tr>
<tr>
<td>Paloh</td>
<td>8,080</td>
</tr>
<tr>
<td>Sg. Seblak</td>
<td>3,537</td>
</tr>
<tr>
<td>Daro</td>
<td>2,851</td>
</tr>
<tr>
<td>Bijat/Stumbin</td>
<td>2,900</td>
</tr>
<tr>
<td>Pulau Bruit</td>
<td>3,353</td>
</tr>
<tr>
<td>Lingga/Banting</td>
<td>2,200</td>
</tr>
<tr>
<td>Nanga Merit</td>
<td>900</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>43,821</strong></td>
</tr>
</tbody>
</table>
Other Potential Biomass Resources for RE in Sarawak

- Other biomass sources still under study to determine economic viability for RE generation in Sarawak. These include:
  - Cocoa husks
  - Sago wastewater
  - Landfill gas
  - Sewage sludge
Bioenergy Production from Biomass – Sarawak Scenario

• Biogas/Biomass Power Plants
  – Unlike the Peninsular & Borneo, Sarawak is still developing payment mechanisms for production and distribution of electricity generated from biomass.
    – High logistical costs to connect RE-generating mills to centralised power grids (mills in remote locations)
  
  – Currently, distribution of power generated from biomass is suggested to be co-localised (particularly for paddy biomass):
    – To supply mill/plant’s own energy needs: running boilers, day-to-day operations, etc.
    – Provide electricity to the surrounding rural communities (as decentralised power source)
Foreign Technology Partnerships with Malaysia & Important Stakeholders
FOREIGN TECHNOLOGY JV WITH MALAYSIA BIOMASS INDUSTRIES

– **CHE Group & Torftech Energy**
  - Landed RM1.97billion (USD620Million) contract to design, engineer and commission 20 200MW rice husk biomass power plants in Vietnam
  - Using state-of-the-art biomass torrefaction technology from UK to burn rice husks for energy while producing non-hazardous high quality ash

– **Teck Guan Group & Mitsui Engineering and Shipbuilding (MES)**
  - Pioneered Malaysia’s 1st lignocellulosic ethanol bio-refinery utilising oil palm empty fruit bunches (EFB) as feedstock
  - Powered by the INBICON technology supplied by MES
- **MyBiomass & Beta Renewables**
  - Collaboration for the analyses, testing and technology adaptation for the conversion of oil palm biomass into biofuels and biochemicals using Beta Renewable’s state-of-the-art Proesa™ Technology

- **SP Multitech Group & Fritz Seeger Siloverschlüsse**
  - SP Multitech provides environmental engineering services including biogas plant designs specifically utilising local biomass and organic wastes as feedstock
  - Adopts German-transferred technology provided by Fritz Seeger Siloverschlüsse.
FOREIGN TECHNOLOGY JV WITH MALAYSIA BIOMASS INDUSTRIES

– **CJBio Malaysia & Arkema**
  - World’s first biotechnology plant producing L-methionine from biomass feedstock in Dungun, Terengganu
  - Utilising thiochemicals technology provided by French Arkema Group.

– **DuPont Malaysia Sdn. Bhd.**
  - Du Pont Malaysia has recently expressed interest in exploring potentials in the oil palm industry in Sarawak via talks and discussions with relevant stakeholders in the state.
– Fitters Diversified Bhd & AHT Syngas Technology NV

• Joint venture between respective subsidiaries Futures NRG Sdn. Bhd. and AHT Services GmbH in designing and supplying biomass and coal-co-generation systems and technologies.

• Aims to make Malaysia a hub for the manufacture and supply of clean technology for the surrounding region.

• Leveraging on neighboring markets such as China and Indonesia, which are looking to reduce pollution from coal furnaces and reduce dependency on diesel fuel respectively.
Important Stakeholders

**MBIC**
One stop centre for information related to biomass industry; feedstock, market study, stakeholders, etc.

**MIDA**
The principal agency for the promotion of manufacturing & services sector through foreign direct/domestic investment, etc.

**Greentech Malaysia**
To promote green technology development in Malaysia via strategic alliances and integrated green technology solutions.

**SEDA**
A statutory body to implement the Feed-in Tariff Mechanisms under the Renewable Energy Act 2011 & promote development of RE

**MIGHT**
Important Stakeholders

Sarawak Corridor of Renewable Energy
One of five economic corridors rich in natural resources and currently focused on energy sector development for Sarawak.

BiotechCorp
The principal agency for the promotion of manufacturing & services sector through foreign direct/domestic investment, etc.

Agensi Inovasi Malaysia
A statutory body set up as a driving force to Malaysia’s innovation economy and towards achieving high income nation status.

MPOB
A government agency to promote and develop the Malaysian palm oil industry via R&D, commercialisation, market promotion, etc.

Sarawak Energy Berhad
State-owned entity tasked with harnessing Sarawak’s abundant energy resources, including biomass.
SWOT Analysis on German Collaboration with Malaysian Biomass Sector
STRENGTHS

• Availability of biomass
• Support from the Government
  – Various business friendly policies to promote commercialisation of biomass
  – Tax holiday for biomass commercialisation / special tax deductions for investment in green technology
• Strong local stakeholders for deal facilitation (MBIC, AIM, MIGHT, BiotechCorp. etc.)
SWOT Analysis

WEAKNESS

- Biomass remains largely for low value utilisation
- Feedstock availability is geographically sensitive
  - Segregated in different locations
- Transportation / logistics costs outweighs the costs of raw materials
- Lack of support for domestic markets
SWOT Analysis

OPPORTUNITIES

• Grant for foreign technology acquisition (up to RM10 Million)
• IP financing available, proven IPR in terms of revenue generation
• Low interest Green Loans / GTFS (for Malaysia Green Entrepreneurs JV with foreign technologies)
• Art of negotiation for feedstock procurement
SWOT Analysis

THREATS

• Uncertain pricing and supply of biomass feedstock
• Barriers to export (technical, certification, etc.)
• Various competitive applications of biomass – mulching, fibre (export to China), biofertilisers / compost, own consumption as fuel
• Business terms negotiation between local biomass stakeholders and foreign technology providers / investors
TAKE HOME POINTS

• Matching grant available for technology acquisition / transfer
• Feedstock available but subject to art of negotiation and local knowledge
• Availability of green funding from various financial institutions (Banks, Venture Capital, Private Equities in the region).
How MBIC Can Help

- Advisory on feedstock availability
- Advisory on market study, investment incentives, financing, etc.
- Technology partnership to treat/convert biomass into energy or high value-added products
- R&D partnership to commercialise biomass into high value-added products
- Business partnership with members, biomass SMEs & major plantation owners, related stakeholders

COME & CONSULT WITH MBIC!
THANK YOU!

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