WASTE-TO-ENERGY IN INDONESIA
OPPORTUNITIES AND CHALLENGES

CURRENT SITUATION

2. Take or pay purchase model would be a burden for PLN[2] as the electricity may not meet the required quality and quantity.
3. A potential of additional regional income of IDR 300 billion by practicing good waste management in Jakarta (A study by an ITB Professor, Akhmad Zainal Abidin).

HOW IS INDONESIA’S WASTE CONDITION?

1. Currently, Indonesia is estimated to produce >190,000 tons of waste daily (±57% organic waste; ±13% plastic waste).
2. 20% of plastic waste ends up in rivers and coastal waters.
3. Indonesia is the 2nd contributor to marine plastic debris worldwide after China.
4. Indonesia aims to reduce marine plastic waste by 70%, reducing waste to 30% and improving waste management to 70% by 2025.

WHAT TO DO WITH THE WASTE?

1. Indonesia plans to convert its waste to energy.
2. Normally, combustible waste can be used as feedstocks for PLTSa[3].
3. Organic wastes can be used as feedstocks for fertilizer industries and biogas plants.
4. Some plastic wastes can be recycled. Meanwhile, some of the others can be used to produce fuels.

WHAT ABOUT WASTE-ENERGY?

1. Based on Presidential’s Regulation No. 35/2018, PLN[2] must purchase the electricity at USD 13.35 cent/kWh (capacity ≤20 MW) or USD 14.54 – (0.076 x contract capacity) cent/kWh (capacity >20 MW).
2. There will be waste-to-energy plants developed in 12 cities in Indonesia.
3. Investments needed for the development can reach hundreds of millions dollars, depending on the technology and capacity.

WHAT IS INDONESIA’S WASTE CONDITION?

Current Situation

Take or pay purchase model would be a burden for PLN[2] as the electricity may not meet the required quality and quantity.

Source: Processed by PYC team from various sources.

Pros and Cons of Waste-to-Energy

Pros

• Provides a better waste management to reduce waste
• Generates a better air quality
• Promotes alternative energy source
• Attracts “green investors”
• Saves devisa

Cons

• Requires high investment cost
• Needs a sustained waste supply
• Needs a huge area
• Has relatively higher electricity production cost
• Produces residual waste (toxic & hazardous)

Challenges in Implementation

1. Requires a high investment for the implementation
2. Needs a sustainable supply of waste with certain characteristics
3. Needs a solid commitment in maintaining the facilities
4. Requires supporting policies to boost waste-to-energy implementation
5. Needs a strong coordination between local authorities, developers & other institutions

WASTE-TO-ENERGY PLANTS IN INDONESIA

<table>
<thead>
<tr>
<th>City</th>
<th>Waste (tons)</th>
<th>Planned Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palembang</td>
<td>2,200</td>
<td>20</td>
</tr>
<tr>
<td>Tangerang</td>
<td>800</td>
<td>20</td>
</tr>
<tr>
<td>South Tangerang</td>
<td>1,200</td>
<td>20</td>
</tr>
<tr>
<td>Jakarta</td>
<td>1,820</td>
<td>29</td>
</tr>
<tr>
<td>Bandung</td>
<td>1,200</td>
<td>35</td>
</tr>
<tr>
<td>Surabaya</td>
<td>450</td>
<td>10</td>
</tr>
<tr>
<td>Surakarta</td>
<td>1,000</td>
<td>20</td>
</tr>
<tr>
<td>Denpasar</td>
<td>1,200</td>
<td>20</td>
</tr>
<tr>
<td>Manado</td>
<td>1,000</td>
<td>20</td>
</tr>
</tbody>
</table>

TOTAL CAPACITY (EXISTING & PLANNED) 234 MW

WASTE-TO-ENERGY PLANT PROJECTS IN INDONESIA 2019-2022

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity (MW)</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>14.5</td>
<td>Bekasi</td>
</tr>
<tr>
<td></td>
<td>55.5</td>
<td>Surabaya</td>
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<tr>
<td></td>
<td>164</td>
<td>Jakarta</td>
</tr>
<tr>
<td></td>
<td>164</td>
<td>Surakarta</td>
</tr>
<tr>
<td></td>
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<td>Denpasar</td>
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<tr>
<td></td>
<td>164</td>
<td>Palembang</td>
</tr>
<tr>
<td></td>
<td>55.5</td>
<td>Tangerang</td>
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<td>Semarang</td>
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<td>Makassar</td>
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<td>55.5</td>
<td>Manado</td>
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<tr>
<td>2021</td>
<td>60</td>
<td>Bandung</td>
</tr>
<tr>
<td>2022</td>
<td>164</td>
<td>Jakarta</td>
</tr>
</tbody>
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[1] KPK: Corruption Eradication Commission

MINISTRY OF ECONOMY AND MINERAL RESOURCES (ESDM) OF INDONESIA claimed that there are 12 PLTSa[3] that will be operated in 2019-2022