IGES – Phitsanulok Municipality cooperation on sustainable waste management for climate change mitigation

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Phitsanulok Municipality
Partnership on North-South-South South Cooperation

- 2010 – A project’s review on sustainable waste management
- 2011 – A project’s review on comparative GHG emissions from various waste treatment technology
- 2012 - Providing capacity building on community based waste management to Battambang City, Cambodia
- 2012 - Supervising a pilot project implementation on organic waste separation at source for composting in Battambang City
- 2013- Implementing a pilot project on organic waste separation at source for composting for climate change mitigation
- 2013- Implementing a MRV at city level
- 2014- Becoming a CCAC member’s city
Pilot project on organic waste separation at source for composting

- Aimed to promote organic waste separation at source for composting as a model city of zero GHG emissions on LCA perspective
- Started in August 2013 through MOEJ financial support under the MRV capacity development program
- Began with 2 markets
- Used a static pile aeration system which is similar to the composting technique for MBT system of Phitsanulok Municipality
## Budget

### Support by Phitsanulok Municipality

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity/Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>2 markets 1,000 kgs/day</td>
</tr>
<tr>
<td>Volunteer</td>
<td>20 persons</td>
</tr>
<tr>
<td>Market committee</td>
<td>34 persons Team</td>
</tr>
<tr>
<td>Municipal Staff</td>
<td>10 persons</td>
</tr>
<tr>
<td>Investment</td>
<td>Truck, Land and Equipment</td>
</tr>
<tr>
<td>Operating (Petrol)</td>
<td>26,000 THB/ month</td>
</tr>
</tbody>
</table>

### Support by Project (IGES)

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>Currency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey &amp; Data Collection</td>
<td>50,000.00</td>
<td>THB</td>
</tr>
<tr>
<td>Training Staff</td>
<td>30,000.00</td>
<td>THB</td>
</tr>
<tr>
<td>Equipment</td>
<td>340,000.00</td>
<td>THB</td>
</tr>
<tr>
<td>Promotion &amp; Campaign</td>
<td>110,000.00</td>
<td>THB</td>
</tr>
<tr>
<td>Monitoring and Evaluation</td>
<td>100,000.00</td>
<td>THB</td>
</tr>
</tbody>
</table>

Support by Project (IGES) **630,000.00 THB**

**Note:** Approximately 1 THB ≈ 3 JPY ≈ 0.03 USD
Target groups

- **Piloting in 2 Markets**
  - **Municipal Market 1**
    - 491 Vendors in Building
    - 130 Vendors around Building
    - Open from 01.00 to 10.00
  - **Municipal Market 6**
    - Day time (01.00 – 19.00)
      - 720 Vendors in Building
      - 400 Vendors around Building
    - Night time (18.00 – 24.00)
      - 295 Vendors in Building
      - 130 Vendors around Building

- **Waste Amount**
  - 1,450 kgs/day
  - 1,940 kgs/day
  - 2,250 kgs/day
Analysing data and composition of waste
Composition of Waste

**Market 1**

- **73%** organic
- **19%** paper
- **5%** other
- **3%** other

Photo of a market with various products on display.
Composition of Waste

Market 6: Day time

- Organic: 86%
- Paper: 3%
- Other: 8%
Awareness campaign to promote waste separation at source

6 August 2013
Drop off station of Organic Waste
Collection & Transport of organic waste
Composting plant
Monitoring and evaluation
MRV Training Workshop

9 October 2013
Amount of separated organic waste from markets

<table>
<thead>
<tr>
<th>Month</th>
<th>Amount (Tonnes/month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>August</td>
<td>47</td>
</tr>
<tr>
<td>September</td>
<td>57</td>
</tr>
<tr>
<td>October</td>
<td>58</td>
</tr>
</tbody>
</table>
### Amount of GHG emission from 1 tonne of organic waste

<table>
<thead>
<tr>
<th>Treatments</th>
<th>GHG emission</th>
<th>Avoided emission from chemical fertiliser production</th>
<th>Net emissions (LCA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitary landfill</td>
<td>914.62</td>
<td>0</td>
<td>914.62</td>
</tr>
<tr>
<td>Mechanical biological pre-treatment (MBT)</td>
<td>196.48</td>
<td>0</td>
<td>196.48</td>
</tr>
<tr>
<td>Composting</td>
<td>218.55</td>
<td>717.10</td>
<td>-498.55</td>
</tr>
</tbody>
</table>

**Note:** This value does not include avoided emissions from landfill of organic waste because baseline emission of Phitsanulok Municipality is MBT.
Overall achievement (Aug-Oct 2013)

Tonnes of CO2-eq/ Monthly managed waste

20% reduction based on LCA

Before August September October

(MBT) (MBT+ Composting)

162 125 130 132
Next Step

• Replication of activities to selected hotels and schools
  – there is 58 hotels and 25 schools within municipal area

• Aims for zero GHG emission based on a life cycle perspective as a part of the municipality’s policy on zero waste landfill policy
THANK YOU FOR YOUR ATTENTION