Industry Creation from Wood Biomass through Local Partnership

Maniwa City Industrial Tourism Department
2928 Kuse, Maniwa,
Okayama Prefecture 719-3201
Tel: 0867-42-5022
E-mail: biomass@city.maniwa.lg.jp

Contents

1. Overview of Maniwa (location, regional profile)

2. Collaborating to Establish a Biomass Resource Distribution System

3. The Biomass Industry Spreads the Word

4. Future Outlook
1. Overview of Maniwa (location/regional profile)

- Merger of municipalities: March 31 2005
  (9 towns and villages of the former Maniwa district merged
  Katsuyama-cho, Ochiai-cho, Yubara-cho, Kuse-cho,
  Mikamo-son, Chuka-son, Yatsuka-son, Kawakami-son,
  Jobo-gun Hokubo-cho)

- Population: 51,657 (from basic resident register, 1 May 2009)

- Area: 828 km² (forested area 653 km², approx 79%)

- Access: Located at intersection of 3 expressways (Yonago
  Expwy; Chugoku Expwy; Okayama Expwy; JR Kishin Line
  runs east–west

- Key features
    Okayama Prefecture's total area
  - Ratio of planted forest: 61%
    Including 70% cypress → Mimasakae brand
  - A centre for the logging industry
    3 markets for unprocessed wood, handling 100,000 m³
    (Okayama Prefecture's total wood production: 330,000 m³)
  - Approx. 30 lumbermills
    Wood procured: 200,000 m³; processed wood shipped:
    120,000 m³ (25% of total manufacturing production)

1. (A) Maniwa Region’s Biomass Initiatives to Date

<table>
<thead>
<tr>
<th>Year</th>
<th>Event or Initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>Young business leaders&lt;br&gt;21st Century Maniwa Study Group</td>
</tr>
<tr>
<td>1997</td>
<td>Environmental town planning symposium held Oct. 1997&lt;br&gt;Ecological power generation launched</td>
</tr>
<tr>
<td>1999</td>
<td>Wood resource industry cluster concept&lt;br&gt;Maniwa Forum held Feb. 2003&lt;br&gt;Woodblock concrete/cat litter developed&lt;br&gt;Pellet manufacture</td>
</tr>
<tr>
<td>2001</td>
<td>Wood Resource Production Committee&lt;br&gt;Marketing Research Group&lt;br&gt;Wood Resource Production Committee&lt;br&gt;Marketing Research Group</td>
</tr>
<tr>
<td>2002</td>
<td>Maniwa Forum held Feb. 2003&lt;br&gt;Woodblock concrete/cat litter developed&lt;br&gt;Pellet manufacture</td>
</tr>
<tr>
<td>2003</td>
<td>Maniwa Forum held Feb. 2003&lt;br&gt;Woodblock concrete/cat litter developed&lt;br&gt;Pellet manufacture</td>
</tr>
<tr>
<td>2004</td>
<td>Maniwa Forum held Feb. 2003&lt;br&gt;Woodblock concrete/cat litter developed&lt;br&gt;Pellet manufacture</td>
</tr>
<tr>
<td>2005</td>
<td>Maniwa Forum held Feb. 2003&lt;br&gt;Woodblock concrete/cat litter developed&lt;br&gt;Pellet manufacture</td>
</tr>
<tr>
<td>2006</td>
<td>Maniwa Forum held Feb. 2003&lt;br&gt;Woodblock concrete/cat litter developed&lt;br&gt;Pellet manufacture</td>
</tr>
<tr>
<td>2007</td>
<td>Maniwa Forum held Feb. 2003&lt;br&gt;Woodblock concrete/cat litter developed&lt;br&gt;Pellet manufacture</td>
</tr>
<tr>
<td>2008</td>
<td>Maniwa Forum held Feb. 2003&lt;br&gt;Woodblock concrete/cat litter developed&lt;br&gt;Pellet manufacture</td>
</tr>
</tbody>
</table>

- Expressway across Chugoku region opened
- Community Revitalization Task Force
- Market research
2. Collaborating to Establish a Biomass Resource Distribution System

Previously, there were a number of reasons why unused resources were going to waste and a large amount of fossil fuel was being used:

- The cost of collecting up such materials on-site could be prohibitive
- The materials could vary in shape, or be too wet
- There was no regional delivery system
- It could be difficult to decide which facilities to give the resources to

To resolve these issues, Maniwa City trialled an energy utilisation system for 5 years from fiscal 2005.

![Diagram of biomass resource distribution system]

**Maniwa Biomass Storage Centre**

Once use of biomass as fuel became established, a constant supply to users had to be maintained. This meant finding a stockyard and putting a system in place for supplying the fuel.

Maniwa Biomass Storage Centre was set up to supply the various types of biomass material reliably. Rather than trying to reduce the costs of collecting unused resources, a system of payment in return for resources was instituted. As a result, large volumes of unused resources were obtained from local residents, lumbermills and forestry cooperatives, etc.

<table>
<thead>
<tr>
<th>Biomass Type</th>
<th>Unused wood (discarded from forest thinning, etc.)</th>
<th>Mill-ends</th>
<th>Bark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume obtained (t/year)</td>
<td>6,500</td>
<td>1,800</td>
<td>2,000</td>
</tr>
<tr>
<td>Rate paid (average ¥/t)</td>
<td>3,300</td>
<td>3,000</td>
<td>50</td>
</tr>
</tbody>
</table>
**Results of Utilising Biomass Energy**

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>Approximate estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass used</td>
<td>t/year</td>
<td>43,000</td>
</tr>
<tr>
<td>Energy produced</td>
<td>GJ/year</td>
<td>600,000</td>
</tr>
<tr>
<td>Crude oil equivalent</td>
<td>KL/year</td>
<td>15,000</td>
</tr>
<tr>
<td>CO₂ reduction</td>
<td>t-CO₂/year</td>
<td>36,000</td>
</tr>
</tbody>
</table>

**Results**

- Produced approx. 15,000 KL/year (crude oil equivalent) of energy. At ¥55/L, that's over ¥800 million-worth of energy for local consumption.
- Achieved CO₂ reduction of approx. 36,000 t-CO₂/year.

**Developing Materials into Products**

- **Woodblock Concrete Products** (products made by combining cypress chips and cement)
  - **Advantages**
    1. Lightweight
    2. Water retentive
    3. Permeable

- **Cypress-wood Cat Litter** (makes use of the antibacterial properties of phytoncides in cypress wood)
  - **Advantages**
    1. Urine solidifies
    2. Burnable
    3. Odour-neutralising & anti-bacterial
3. The Biomass Industry Spreads the Word

◆ Maniwa Biomass Tours serve to publicise Maniwa’s initiatives via industrial tourism

- In December 2006 Maniwa city government and the Maniwa Tourist Association collaborated to commence Maniwa Biomass Tours. Launched partly to handle the increasing number of observers visiting facilities in the burgeoning biomass sector, the tours also offer a means to publicise related initiatives in the Maniwa region.

- Around 2,000 people participate in the tours annually

☆ Maniwa won the Minister for Economy, Trade and Industry’s 14th New Energy Award in fiscal 2009 for its biomass tours scheme

☆ The scheme also won Maniwa a commendation at the 4th Awards for Community-building Through Industrial Tourism in fiscal 2010

- Maniwa biomass tours allow participants to learn first-hand about the Maniwa region’s biomass use.
- Information is disseminated through tours that combine industry with tourism. Boosts the forestry and wood processing industries, promoting collaboration with other industries.

◆ Collaborating With Businesses Through the Domestic Credit System

Using profits from biomass sold

Plans are under way to use profits for initiatives such as improving woodland, planting hardwood trees, clearing underbrush, conducting environmental education, etc.

Biomass boiler installed in new city hall building will be used to earn domestic credits

A plan is in place to carbon-offset all energy used for manufacturing at Tombow Co., Ltd.’s main sportswear factory

The potential for carbon-offsetting energy used in operating Maniwa’s biomass tours is currently being investigated

- Biomass consumed 400t/year
- CO₂ reduction 200t-CO₂/year

The community

Maniwa municipal government

Maniwa Tourist Association
4. Future Outlook

The groundwork for Maniwa’s approach to managing biomass has been laid. Now the focus will be on establishing a biomass industry utilising local resources.

- Train personnel and educate the public
- Establish a biomass industry through collaboration between government, industry and academia
- Identify needs and meet them

◆ Maniwa City Biomass Refinery Project Association established as a joint body representing government, industry and academia
◆ Maniwa Biomass Lab opened as a centre for R&D
◆ National and prefectural projects launched in Maniwa (fiscal 2010–fiscal 2014)

It is essential to collaborate within the region and access the know-how necessary to obtain specialist technologies and personnel, to amass and share information, and to find corporate partners

Thank you for your attention