



University of Hawai'i at Mānoa

## **Hawai'i Natural Energy Institute**

School of Ocean & Earth Science & Technology

# **The Biomass Town – Local Biomass Utilization for a Local Community**

The basic concept of the Biomass Town is to utilize the biomass resources obtained in the region efficiently and economically, minimizing waste energy and materials. A Biomass Town is a local biomass utilization system for a local community.

As a local biomass utilization system, we have proposed a local fuel system that achieves a reasonable regional energy system based on local production of fuels for local consumption from locally available biomass. Because the local fuel system is operated within a limited area, long-distance transportation of both biomass feedstock and the fuels produced is not needed. Therefore, the inefficient use of transportation energy can be prevented. Furthermore, the local fuel system does not require the national-wide infrastructure to distribute uniform fuels. This self-sufficient biomass energy system meets the strategy for efficient utilization of regionally-distributed biomass under the concept of a Biomass Town.

We have proposed and developed the local fuel system focusing on existing regions (Katori-shi, Chiba and Shinano-mach, Nagano, Japan). This presentation deals with the design and demonstration of the local fuel system as follows.

### Design of the "Biomass Town" system

- Production of local fuels, such as biogas and bioethanol, under the consideration of the availability of biomass feedstock and the demand for the products.
- Total system design in the existing regions.
- Reasonable material and energy balance throughout the whole system, from the collection and transportation of the biomass feedstock to the production and consumption of the local bioethanol fuel.

### Demonstration of the "Biomass Town"

- Establishment of demonstration sites in Katori-shi and Shinano-mach, Japan.
- Development of key technologies for local fuel production; e.g., a small-scale, high-efficiency fuel production process.
- Social experiments, collaborating with local administration, industry, and residents, etc.
- Evaluation of the local fuel system, focusing on acceptability, sustainability, and the local and global environment.

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**Wednesday, March 5, 2008**

**2:30 – 3:30 PM**

**POST 723**

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