

Maximisation of Wood in Utilisation of Biomass Resource

Maniwa City,
Okayama Prefecture



Background

After the period of rapid economic growth passed, the lumber industry saw a decline and the young entrepreneurs of the area sensed a danger that the vitality of the area would follow, so they launched a study group, called the Maniwa School of the 21st Century. It was there that the idea of promoting industry through maximum use of wood biomass came about. After several study meetings with outside experts, they proceeded with the concept of effectively utilising woody waste products (left-over wood, sawed remnants, wood shavings, bark, etc.) that is produced in large amounts by the forestry and lumber industry.

Currently, Maniwa is using wood biomass, which is a byproduct of its major industry, the forestry and lumber industry, as an energy source, and is creating structures for resource circulation within the region.

Project Aims

1. Varied utilisation of forestry and lumber industry byproducts
2. Industrial cooperation between different types of businesses
3. Revitalisation of local industry and sustainable development
4. Create a recycling-orientated society

Project Outline

The investigation of the use and application of wood byproducts was first started under the leadership of private businesses, but after garnering the support of the national and prefectural governments and making progress in the form of various verified projects, so the private and public sectors came together to promote the utilisation of wood biomass. As a result, the area was able to take advantage of leftover wood, sawed remnants, etc. as a source for power and heating.

In Maniwa, private leadership, in cooperation with the government, has constructed a system that is centered on its major industry to, “Reasonably use the resources under our noses.” The promotion of the utilisation of biomass, focused on the use of wood, has led to the realisation of the development of all sorts of projects.

◆Biomass energy regional systemisation trial project

The Maniwa Biomass Collection Centre was established as a base to ensure the steady supply of woody raw materials. This efficiently transports and collects wood biomass fuel from the local area, as well as using it as raw materials to manufacture wood chips. In addition, woody biomass boilers were installed in the city’s public facilities, and these use the manufactured fuel.



Biomass Collection Centre

generating 10,000 kW/h.



Maniwa Biomass Power Station



City Hall is equipped with a biomass boiler

◆Construction of the Maniwa system

With wood biomass, a system is needed to identify the origin of the wood as the purchasing price differs according to a fixed price purchasing system for sustainable energy, depending on whether unused wood like timber from forest thinning or general wood is being used to generate power. Therefore a council for the steady supply of wood resources was set up by the parties involved, and an IT system to certify the production area of the wood was constructed, called the “Maniwa system”.

◆Maniwa biomass power generation project

In order to create a revenue earning model from the manufactured biomass fuel, people from the forestry and timber industry coordinated with government and local affiliated organisations to establish the Maniwa Biomass Power Corporation and the Maniwa Biomass Power Station started operating in 2015,

Strengths and Innovations

◆Biomass energy regional systemisation trial project

1. Set the wood biomass purchase price by building consensus among the people concerned
2. A steady supply of wood biomass fuel from the Maniwa Biomass Collection Centre
3. Active utilisation of bark, branches, and leaves as fuel

◆The Maniwa system

1. Realisation of traceability for wood biomass
2. Optimisation of exact calculations for the amount of supply and distribution

◆Maniwa biomass power generation project

1. High operating efficiency
2. Recycles money into the local economy by returning revenue earned from selling electricity generated by using local resources as fuel, back into the region
3. Returns profits to the owners of the unused wood in the forest

Results of the Project

1. By transforming traditionally useless materials like unused wood and sawed remnants into valuable materials, around 1.4 billion yen in annual fuel costs was returned to local individuals and corporations
2. Wood byproducts making a profit led to an

increase in profitability for producers of raw materials and sawmills, and also contributed to reviving the local economy

3. New jobs (about 50) were created from the projects related to power generation, fuel manufacture, etc.
4. With timber left over in the mountains from forest thinning being tidied up, it has also played a big role in forest conservation
5. A model of local production for local consumption was constructed for electric power, as part of the power generated by the power station was supplied to public facilities like primary and middle schools and City Hall

Problems, and Responses

◆Steps before implementation

Some of the issues that became clear were that the unused wood and sawed remnants that become fuel, can become an unreliable source depending on the season and situation of the sawmills. In addition, the lack of conformity in the characteristics of the fuel, in terms of moisture content and shape, means they're not suitable for being inserted automatically. However, the establishment of the Maniwa Biomass Collection Centre aimed to provide a stable supply, by having large stocks of unused wood and sawed remnants, and to produce high quality fuel as a wood chip factory.

◆After the project started

Processing and use of burned ashes.

Reduction of moisture content of fuel wood chips (thus improving quality) in periods of intense cold.

Future Developments

It is estimated that the city has reached around 33% self-sufficiency in energy due to wood biomass. However, a number of issues remain for the future, like the stable supply of unused wood and the improvement of fuel quality. As a result, the people

involved plan to cooperate and continue to promote the project to construct a system that returns even greater profits to the local area.

Also, as wood biomass is a byproduct of the manufacturing and distribution processes of lumber and sawmill products, there is a need to strengthen the operations of the business entities involved in the main forestry and lumber industries, by efforts like increasing production output at sawmills and promoting the use of CLT (Cross Laminated Timber). By trying to actively make it a growth industry and increase awareness among people to increase the demand for wood, and by further promotion of a system that takes full advantage of the wood, the public and private sectors can work together to create a sustainable local economy.

Reference URL

<http://www.biomass-tour-maniwa.jp/english/>

Contact

Administrative office: Industry & Tourism
Department Forestry and Biomass Industry Section

Telephone number: +81-867-42-5022

Email: biomass@city.maniwa.lg.jp