Conserving biodiversity by utilizing wood thinned from forests as biomass fuel for power generation

Nobeoka city
Asahi Kasei Corporation
Location of Nobeoka city and Gokase River
Location of Nobeoka city and Gokase River watershed area
Location of Nobeoka city and Gokase River watershed area

The mountains of Kyushu

The downtown of Nobeoka

The Pacific Ocean
The downtown of Nobeoka city
Nobeoka district consists of twenty five plants
Major products manufactured in Nobeoka city by Asahi Kasei

- Health Care
- Electronics
- Chemicals
- Fibers
Power plants of Asahi Kasei

Four thermal power plants
Nine hydro power plants

Capacity: 180,000 kW
Electricity at maximum
Construction of the second wood biomass power plant
Generating electricity using woodchips and coal

Scheduled start-up: July 2012
Fuel composition*: Wood biomass, 60%
Coal, 40%
* by energy content

Wood biomass, 100,000 tons per year
Coal, 20,000 tons per year
Major raw materials for woodchips

Wood material from construction waste ➔ Woodchips

100,000 tons of woodchips will cut CO2 emissions from fossil fuel by 170,000 tons per year
Forests in Gokase River watershed area

Artificial forests account for 60% of all the forests
Forestry and lumber production are major industries in Nobeoka city
The issues that forestry and artificial forests in Gokase River watershed area have.

1. *Regeneration of old artificial forests doesn’t progress*
2. *Declining of the local communities in the mountainous area*
3. *Impairing biological diversity because the surface doesn’t get enough sun*
Study of procuring and combusting woodchips from Gokase River watershed area at the existing biomass power plant.

Regeneration of old artificial forests doesn’t progress

Declining of local communities in the mountainous area

Impairing biological diversity in the old artificial forests

Help to solve
The members of the procurement and combustion study

The agriculture and forestry department of Nobeoka city

Nobeoka forestry association

Asahi Kasei
A issue for sustainable utilization of forest woodchips

the selling price of woodchips is higher than that of coal by calorie basis

Logs for woodchips

Coal

Lowering the price of woodchips from the forests is a big challenge.
Procurement and combustion study at the existing power plant to develop a system for supplying low-priced woodchips.

The issues we want to identify:
- Cost
- Quality
- Distribution

Cutting and carrying out logs

Chipping logs

Combustion woodchips
Goal of the procurement and combustion study run

Creating a system to enable woodchips from artificial forest to be utilized at cost competitive with coal

Coal

Logs from artificial forests
The expected benefits to forestry, local communities and biodiversity by the sustainable utilization of woodchips from Gokase River watershed

1. Promoting to regenerate old artificial forests
2. Stimulating forestry and local communities by contributing to the increase of employment opportunity
3. Restoring biodiversity in old artificial forests

Gokase River watershed area
Research of biodiversity change in artificial forests

Underbrush and shrubs among trunks of cedar

Mammals

Insects

Birds
Thank you very much
Regeneration of old artificial forests doesn’t progress

Old artificial forests, more than forty years old

Young trees

Collection by clear cutting or thinning

Afforestation, replanting
local communities in the mountainous area

A village with terraced rice fields

A small town in mountainous area

Terraced rice fields after harvesting

Kagura festival
Impairing biological diversity because the surface doesn’t get enough sun

Ideal condition, thinning in row

Present status,
Artificial forests with a little light at the surface

Ideal condition, clear cutting and afforestation
Cost difference among the cutting and pulling out methods

High cost
- Logs discarded in forests
- Pulling out logs while impeded by standing trees on steep slope

Low cost
- Cutting over all the trees
- Pulling out all the trees cut at the same time
Content of my presentation today

1. Nobeoka city and Gokase River watershed area.

2. The power plants we own now and the new wood biomass power plant being constructed.

3. The issues that forestry and artificial forests in Gokase River watershed area have.

4. Feasibility study of procuring and combusting woodchips from the artificial forests.

5. Expected benefits to forestry, local communities and biodiversity by the sustainable use of woodchips from the artificial forests.

6. Planned research for change in biodiversity by thinning, clear cutting and afforestation in the artificial forests.