

Japanese local government and the environment - two case studies

Case study 1: Kamikatsu town's zero waste policy

For many years Japan has dealt with most of its waste by incineration. There are over 1300 incinerators across Japan which burns over 80% its garbage, higher than any other developed country. However, over the past decade the national government and local authorities have been implementing steps to reduce the amount of garbage that is incinerated because of serious health and environmental concerns related to the smoke and ash produced in the incineration process. These steps usually involve some sort of garbage separation policy to recycle reusable items and limit the amount of items containing potentially toxic substances burned. Most local authorities have their residents separate garbage into at least three or four categories, such as 'burnable', 'non-burnable', 'plastics', or 'recycleable', but residents of Kamikatsu, a town of around 2,000 people on the island of Shikoku, are made to separate their garbage into no less than 32 categories.



Kamikatsu's environmental roots can be traced back to 1994 when plans were drawn up for it to become a "recycling town". An analysis of household garbage the year before showed that 30% was kitchen waste, and from this the council implemented a scheme to subsidise the costs of electric garbage disposal units and composters to deal with this type of waste. 90% of households in Kamikatsu have made use of this scheme, which

also laid the groundwork for the introduction of future environmental policies.

In January 2001 a law was enacted effectively banning the use of certain high-polluting small-type incinerators. This forced small towns like Kamikatsu that used these types of incinerators to decide on how its waste would be handled from that time on. Considering the amount of waste the town actually burned was comparatively small, introducing a large-type incinerator would have been economically and physically impractical. So after considering various options, the local authority drafted a bold new scheme to have residents physically take their garbage to a recycling station and separate it into 32 different categories.

The day after the scheme was finalised, town hall personnel set about explaining it to residents, and were surprised at the open-minded response they received. Many residents said they would do whatever they could to help and would even think about disposal issues when making their own purchases. Residents began taking their 32 types of separated garbage to the recycling station in January 2001 and within a

Kamikatsu town profile

Location: Tokushima prefecture, Shikoku

Population: 1812, 16.5 people per km²

Area: 109.68km²

Terrain: Mountainous

Access: Road access only



Kuzumaki town profile

Location: Iwate prefecture, northern Japan

Population: 7813 as at January 2009, 16.8 persons per km²

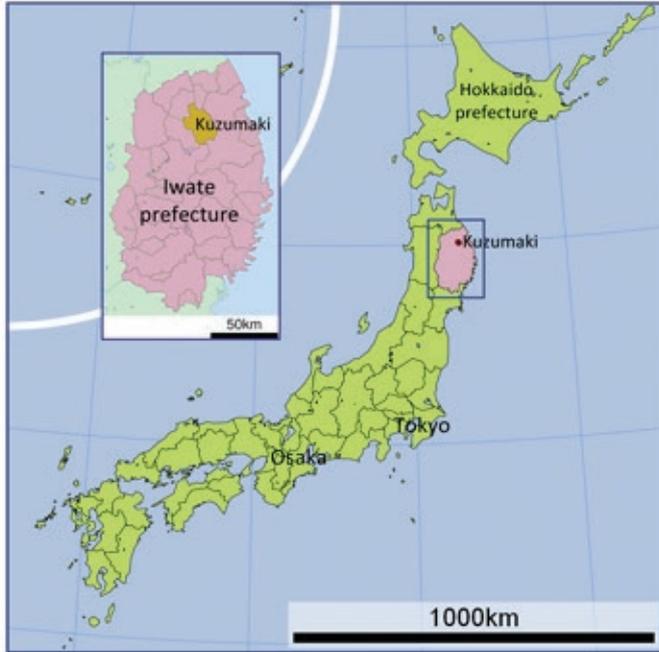
Area: 434.99km² of which 86% is forested

Elevation: 1000m above sea level

Terrain: mountainous

Access: 20 minutes by car from neighbouring Iwate town which is connected to Tokyo by a 2 hour 40 minute journey on the Shinkansen (bullet train)

Main industries: dairy farming and production, some beef cattle farming, wine making, forestry



These days, the number of tourists is ten times that.

Kuzumaki's desire to maximise its local resources did not stop there. In June 1999, 18 months after the ratification of the Kyoto Protocol, Kuzumaki's first three wind turbines began operation and soon became the symbol of the town.



Case study 2: New energy and self-sufficiency in Kuzumaki town

Over the last ten years the remote Japanese town of Kuzumaki, in the northern prefecture of Iwate, has embarked on a number of new energy projects in the once oil-dependent town. The symbol of Kuzumaki's achievements are 15 wind turbines set atop the surrounding mountains, but the main driving force behind them is the town's desire to maximise the potential of local resources to become as self-sufficient as possible.

Town of milk and wine - the beginnings of self-sufficiency

This road to self-sufficiency in Kuzumaki began several decades ago when the town was basically unknown. There was neither rail nor highways to attract business, and no special facilities such as hot springs resorts, ski resorts, or golf courses to lure tourists. To revitalise the area and create employment Kuzumaki could only use the certain resources available to them, and since 1976 three joint public-private ("third sector") ventures were established for this purpose.

The first was the Kuzumaki Highland Farm, a dairy farm which manufactures and sells fresh dairy products, and accepts and provides accommodation for farm tourists. It is now one of the largest farms of this type in Japan. The second was Kuzumaki Wine, established in 1986, to use the grapes that grow wild in the region to produce and sell wine and juice. The third venture was the Greentage Hotel, established in 1993 as a lodging for the increasing number of tourists and as a meeting place for the town's residents. Kuzumaki soon became known as the "town of milk and wine".

The concept of third sector ventures have always brought on images of unprofitability in Japan, but these three businesses have always returned profit, as well as creating around 150 jobs and boosting tourism. 20 years ago, only 50,000 people visited Kuzumaki throughout the entire year.



Above: wood pellets manufactured in Kuzumaki



Above: solar panels at Kuzumaki Middle School



Above: inside the woody biomass gasification power plant

from a process of partial combustion is burned to power the generator. As with the manure biomass plant, the heat generated here also is put to practical use. Finally, the charcoal left over is reused as soil conditioner.

Lastly, wood pellets, a common wood fuel, are manufactured by the Kuzumaki Ringyō company. The company originally manufactured paper from woodchips, but was at a loss at how to deal with the left over bark from the production process. Taking advantage of the oil shock of the early 1980s, Kuzumaki Ringyō began producing wood pellets in 1981 and has continued doing so for almost 30 years. Five boilers and 70 stoves that use these wood pellets have been installed in private and public social care homes, and when residents purchase a pellet stove they are eligible for a rebate of up to 100,000 yen (£630).

Using and protecting forests

Forests are a source of water, air, food, and energy, and they also absorb carbon dioxide. However, the forestry industry in Japan today is in an extremely precarious position, and there are many mountain forests that have been devastated. In Kuzumaki there are currently two special organisations set up to do something about this situation.

One is called the Furusato Zukuri ("hometown shaping") Foundation which collects 5000 yen (£32) donations from individuals and businesses to support thinning and reforestation businesses, and installs wood pellet stoves in public institutions such as schools. The other is called the Kuzumaki Tableland Project for the Improvement of Forest Environment, which encourages private enterprise to take ownership of forests in order to manage the forests and improve the condition of their environment through activities such as thinning and tree planting. Each year both organisations also organise environment-related events such as tree planting around the town.

For more information on these case studies or on any other area of local government in Japan please contact the Japan Local Government Centre by the contact details provided.

Wind turbines - the symbol of Kuzumaki

In Kuzumaki there are now 15 wind turbines in operation. The 1200kW generator (400kW x 3 wind turbines) that began operation in June 1999 produces two million kWh of energy annually, providing the electricity requirements of 600 households. As well as contributing to the prevention of global warming, these wind turbines also raised environmental awareness among residents and have acted as tourist attractions. The generator that went into operation in December 2003 produces 54 million kWh of energy annually, enough for 15,000 households.

A unique characteristic of Kuzumaki's wind turbines is that they are located in a cool highland area, over 1000m above sea level. Although there has been an increase in the number of wind-generated power stations in mountainous areas of Japan in recent years, the vast majority of them are in coastal areas. This is related to a number of factors, such as natural environment and flora and fauna protection, aesthetic problems, and regulations on natural parks. However, another big reason is lack of infrastructure such as roads and electric cabling in mountainous areas. If the necessary infrastructure has not been developed these types of projects become enormously expensive, to the point where there may be no overall benefit to the wind power industry. However, Kuzumaki already had the necessary infrastructure of roads and electric cabling in place prior to the development of these wind turbines because of the development of the large dairy cattle farms in the 1970s. Thus, these sites now function as both cattle farms and bases for energy production.

Showroom for new energy

A number of other new energy facilities were introduced following the development of the initial three wind turbines. In 2000, a 50kW solar energy generator was installed at Kuzumaki Middle School which covers a quarter of the cost of the school's power consumption and contributes to pupils' and residents' environmental education and awareness of environmental issues.

Since 2003 cow manure has been gathered from the nearby Kuzumaki Highland Farm and fermented to produce methane gas which is then used to generate power at a biomass plant. The heat created during electricity generation can also be used to warm water or air. Furthermore, at the end of the process the fermented manure is then put back into the fields and pastures as a high quality fertiliser.

There is another biomass plant at the Kuzumaki Highland Farm. Beginning operation in 2005, a woody biomass gasification power plant uses wood from thinned out trees to generate electricity and produce heat. The wood is chipped and the gas produced