

## 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 km<sup>2</sup>

**Area:** 109.68km<sup>2</sup>

**Terrain:** Mountainous

**Access:** Road access only





Above: a mother and her son sorting their garbage at the Kamikatsu recycling station.



Above: crates marked 'steel caps', 'transparent bottles', 'brown bottles', 'other bottles', 'ceramics and other glass bottles', 'batteries', and 'fluorescent tubes'.



Above: the Kamikatsu recycling station.



Above: local villagers at work on the terraced rice fields of Kamikatsu.

short period of time support groups had even been set up for those unable to make it to the recycling centre on their own.

Residents are expected to rinse all bottles and containers and bundle all papers before depositing them at the recycling station where drums are marked with labels as specific as 'lighters', 'razors', 'nappies', 'clear bottles', 'brown bottles', 'other coloured bottles', and 'sake bottles'. Items that can be reused are taken to a local recycling store where they can be picked up by anyone free of charge. Other materials are transported to recycling plants around the country, with only a small remainder being buried in landfills or incinerated at a neighbouring town's incineration plant.

Within several years of implementation up to 80% of waste was being recycled, and in September 2003 Kamikatsu made a declaration to become Japan's first zero-waste town, with the goal to have zero garbage incinerated or put into landfill by 2020. It also seeks cooperation from the national and prefectural governments as well as manufacturers to make changes in laws and regulations and product packaging.

The international media has also picked up on Kamikatsu's ambition, and since 2005 the Zero Waste Academy, an NPO set up to manage the scheme, has been constantly receiving visitors from all over the world, many of them young people eager to learn more about environmental management.

## 上勝町資源分別方法

2004年4月1日より

毎日の収集  
場所: 日比ヶ谷ゴミステーション 収集場所: 毎日 午前7時30分から午後2時まで  
※本年以降は7月31日~1月2日までお休みします。

<p>①アルミ缶 中身を洗い切って 乾かして下さい。</p> <p>②スチール缶 中身を洗い切って 乾かして下さい。</p> <p>③スプレー缶 中身を洗い切って 必ずふたを付けて 乾かして下さい。 ※キャップ・噴射ボ タンは、はずす。</p> <p>④金属製キャップ 水洗いして下さい。</p> <p>びん類 ⑤透明びん ⑥茶色びん 中身を洗い切って 乾かして下さい。</p> <p>⑦その他のびん ⑧リサイクルびん</p> <p>⑨その他のガラス類・陶器類・貝殻類 汚れを洗い落とす 乾かして、破かしてか ら出して下さい。 ただし、高層ビル や等々、大きな陶 器類は最大ごみと して出して下さい。 破砕機が壊れるので お気をつけて下さい。</p> <p>⑩乾電池 ・アルカリ・マンガン ・リチウム ・ボタン ・ニカド</p> <p>蛍光灯 ⑪そのまま ⑫壊れたもの</p> <p>⑬鏡・体温計</p>	<p>⑭乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>⑮乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>⑯乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>⑰乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>⑱乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>⑳乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉑乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉒乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉓乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉔乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉕乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p>	<p>㉖乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉗乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉘乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉙乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉚乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉛乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉜乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉝乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉞乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㉟乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㊱乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p>	<p>㊲乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㊳乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㊴乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㊵乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㊶乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㊷乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㊸乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㊹乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㊺乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㊻乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㊼乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p> <p>㊽乾電池 乾電池は別紙の 説明書に従って 乾かして下さい。</p>
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連絡先: 介護予防活動センターひだまり (44-6080) 役場産業課 (46-0111)  
\*それぞれを分別して日比ヶ谷ゴミステーション内の指定された場所にお持ち込み下さい。

Above: the instruction sheet given to all Kamikatsu residents on how to correctly separate their garbage. 32 types of garbage are taken to the recycling station. Types 33 and 34 are household waste and farming waste, handled separately.

## Kuzumaki town profile

**Location:** Iwate prefecture, northern Japan

**Population:** 7813 as at January 2009, 16.8 persons per km<sup>2</sup>

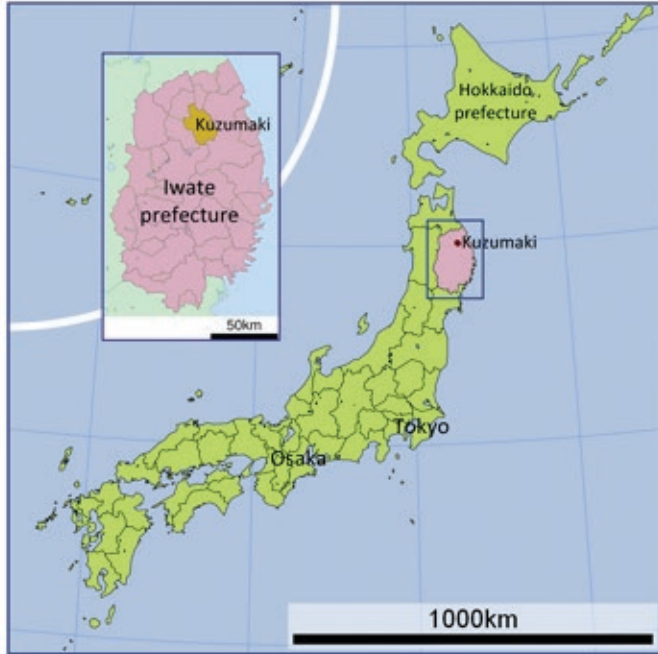
**Area:** 434.99km<sup>2</sup> of which 86% is forested

**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