

Transforming the Industry while Achieving a Sound Material-Cycle Society

The case of Kitakyushu City, Eco Town

Japan Project Brief

Background and Objectives

Kitakyushu City historically grew due to the development of heavy industry, such as iron and steel. Although these heavy industries brought economic prosperity, they also caused serious environmental pollution problems. Citizens, especially the mothers of small children, stood up and tackled this issue by involving both public and private sectors. Their collaborative approach resulted in improving their environment significantly by 1980, while simultaneously achieving economic growth (Figure 1). The city has been active in sharing knowledge and experiences with other nations suffering from industrial pollution. These activities were appreciated throughout the world and awarded by various international institutions, and now, Kitakyushu City is known as environmentally-friendly city.

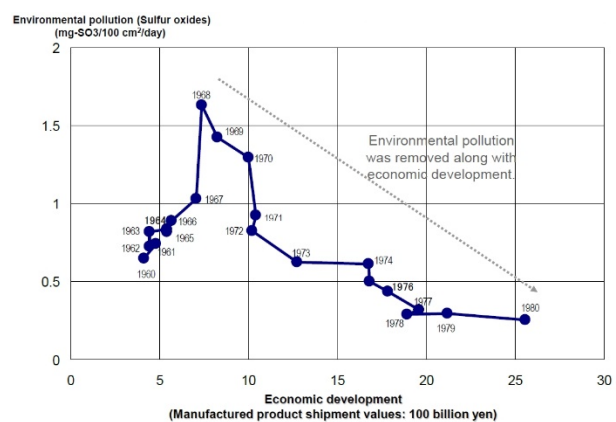


Figure 1: Simultaneous achievement of economic development and environmental improvement in Kitakyushu City

Source: "Survey on the Japanese Experience" by World Bank

However, Kitakyushu City faced another challenge around the 1980s, following the decline of heavy industry due to the economic depression after the Plaza Accord and intense competition on the international market. Kitakyushu City promoted an "environmental recycling industry" as one of the next-generation industries. This took into account the four advantages of Kitakyushu: 1) accumulated resources and infrastructure for industries; 2) cooperation network among citizens, local governments and companies; 3) ample experience on international cooperation; and 4) superiority of Hibikinada district, where vast land and facilities are available for industry and waste treatment. Meanwhile, waste volumes were increasing all over Japan due to mass production and waste. In order to address such waste-related issues, the national government promoted the creation of a recycling society. Taking into account these circumstances, Kitakyushu City developed the Kitakyushu Eco-Town Plan which was approved by the current Ministry of Economy, Trade and Industry (METI) and the Ministry of the Environment (MOE) in 1997 as the first case of "Eco-Town Project". The project generated positive impacts on economy, society and environment in Kitakyushu City and subsequently drew worldwide attention.

The objective of this profile is to review the Kitakyushu Eco-Town Project, and identify lessons learned from the experience.

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Project Overview

Kitakyushu Eco-Town Project

The Kitakyushu Eco-Town Project has been carried out in the Hibikinada Area of Kitakyushu City since 1997. It aims to promote “zero emissions” through re-utilizing waste as the raw material for other industries, thereby fostering a resource recycling society. Kitakyushu City formulated several comprehensive strategies for basic research technology development, testing and industrialization to achieve these objectives and promote the creation and industrialization of environmental industries.

Basic research and education are conducted in the Kitakyushu Science and Research Park (KSRP), which hosts various research institutions from in and outside of Japan. Practical research is conducted in the experimental study area (6.5 ha), where both research institutions and private companies are clustered. They implement experimental studies, particularly on technologies related to final disposal sites, recycling, and detoxification of toxic substances. In the Hibikinada area, Kitakyushu City constructed the Comprehensive Environmental Complex (Figure 2). This complex hosts facilities for recycling materials and energy. Eight projects are in operation in the area, and the whole

20ha area has been filled since 2005. In addition to materials and energy recycling businesses, the city has invited automobile recycling facilities and SME recycling companies to the Hibikinada Area. Multiple treatment facilities were also constructed to treat residues discharged from Eco-Town and other areas, meaning there is no waste generated from the area. These treatment facilities also provide heat, and wind power generation has also been in operation in the Hibikinada area since 2003.

Eco-Town Project is subsidized by two types of funds: the so-called “eco-town soft” subsidy, which subsidizes up to 50% of the costs of feasibility studies, exhibitions, and information provisions to residents and companies; and the so-called “eco-town hard” subsidy, which subsidizes up to 33%–50% of the construction and management costs of the recycling facilities¹. Kitakyushu City also tries to secure a sustainable budget for implementing environment-related policies including this Eco-Town Project with a tax called the “environmental future tax”. This is a special, local-purpose tax imposed on landfill of industrial waste. Since the tax is not imposed on intermediate treatments, it is also expected to promote recycling activities of companies and reduce any waste generated from them.

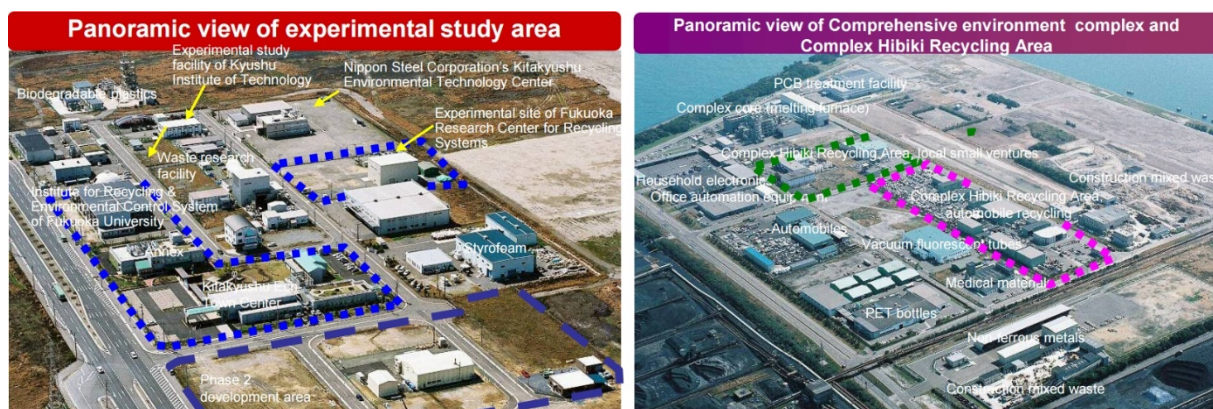


Figure 2: Panoramic views of experimental studies and comprehensive environmental complex recycling area

Source: Environmental Future City Promotion Office, Environment Bureau, City of Kitakyushu. 19 January, 2015. Environmental Projects in Kitakyushu. https://sustainabledevelopment.un.org/content/documents/12594Nakamoto_20150115.pdf

Public Education

Kitakyushu's Eco-Town is very active in carrying out information disclosure. Kitakyushu Eco-Town Center was established in 2001 to publicize the Eco-Town Projects. They organize a study tour for citizens including elementary school students for educational purposes. Citizens can actually visit the designated companies and institutions in the Eco-Town and learn about their activities on site.

Risk Communication on Hazardous Waste Management

The Complex Hibiki Recycling Area has various plants and facilities that use advanced technologies to recycle waste or ensure that it is harmless. The area has a large PCB treatment facility, the first of its kind in Japan. Since operations started in 2004, Kitakyushu City has been playing a critical role in the PCB treatment business. The facility accepts PCBs from 17 prefectures in west Japan and detoxifies them safely. PCBs were once used as coolants and lubricants in electrical equipment, but in 1974 Japan prohibited the manufacture, import and use of PCBs by law because of evidence that they build up in the environment and can cause harmful health effects. Prior to the construction of a PCB treatment facility, there were many protests from residents all over Japan. Therefore, Kitakyushu City conducted more than 100 consultation workshops to explain treatments and safety as a part of proper risk communication. Information disclosure of the treatment facility has continued to be promoted with regard to environment and safety measures with visitors welcome any time and online publications available from the websites of the Japan Environmental Storage & Safety Corporation (JESCO) and Kitakyushu City.

Project Impacts

Economic Impact:

According to a 2015 document², the total

investment for the Eco-Town Project amounted to approximately JPY 66 billion and the project has 1,400 employees. The cumulative number of visitors between 1998 and 2012 is approximately 1 million. In addition, the special tax "environmental future tax" was introduced in 2001, and generated JPY 5.2 billion in 2004.

Social Impact:

By 2015, approximately one million people had visited Eco-Town. In 2012 alone, approximately 4,000 people from overseas visited the town. Educational and promotional activities make a difference in the long-term, because residents gain higher environmental awareness. They then tend to make more of an effort to reduce garbage and lessen their environmental burden as well as to influence behavior. It is also interesting to observe that Kitakyushu took advantage of having an Eco-Town to promote the city's recognition both internationally and domestically, resulting in residents having a favorable outlook towards the local government.

Environmental Impact:

Due to the Eco-Town Project, the city succeeded in reducing landfill waste from 31.5% in 1996 down to just 10.5% in 2001 while increasing the recycling rate from 40% in 1991 to 61.7% in 2001. The Eco-Town Project also contributed to a reduction of 380 thousand tons of CO₂ per year².

Lessons Learned

Based on Kitakyushu's experience, three factors can contribute to the development of recycling and eco-industry.

Utilization of Existing Technologies and Infrastructure Systems:

Kitakyushu City could benefit from other existing infrastructure and logistic systems that were developed during the previous industrial



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development era. In addition, technologies available from the existing companies can be utilized. For example, PET and automobile recycling technologies are based on iron making technologies of Nippon Steel Corporation. Another example includes medical device recycling, which is based on the residues technology of the Aso Cement Corporation. Therefore, in the comprehensive environmental complex, it is critical to have not only financial support from large local companies critical, but also technological support.

Geographical Proximity:

Proximity to the market helped Kitakyushu achieve a sound material-cycle society. Because there was a nearby demand for recycled goods, they did not have to be transported over a long distance. For example, most of the materials recycled from automobiles and electronics were sold in Kitakyushu City because the manufacturing sector formed an industrial cluster. Also, the consensus building on transaction costs for the location of the recycling facilities has declined because the recycling industry is concentrated in the Eco-Town.

A Partnership Among Multi-stakeholders:

The partnership among governments, private companies, academia and citizens is the key to Kitakyushu's Eco-Town. The city government, METI and local companies collaborated to create the recycling industry even before the

launch of the Eco-Town Project in 1997 because local companies needed to change their business to expand their stagnant profits. Nippon Steel Corporation, which later became one of the main companies in the formation of the Eco-Town, suffered deteriorating competitiveness, and so they transformed their business from heavy industry to a complex industrial structure. They collaborated with the Kitakyushu City Government, Mitsui & Co., Ltd. and Nishi-Nippon PET-Bottle Recycling Co., Ltd. in order to commercialize the business and recycle PET bottles. Therefore, when the policy of METI and MOE for the Eco-Town Project and a sound material-cycle society were announced, Kitakyushu City welcomed this development and was in a good position to begin. In addition, partnering with research institutions was also an important factor for Eco-Town. Those institutions provided new methods and technologies for Eco-Town projects and waste management. On top of that, it should be noted that citizens' endorsement of the project is another critical factor for sustainable project implementation.

¹ Subsidies to software and hardware projects were abolished in 2004 and 2005, respectively

² Environmental Future City Promotion Office, Environment Bureau, City of Kitakyushu. 19 January, 2015. Environmental Projects in Kitakyushu. https://sustainabledevelopment.un.org/content/documents/12594Nakamoto_20150115.pdf

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