

## KITAKYUSHU (JAPAN)

### General information

Area:	470km <sup>2</sup>
Population:	1 million
National GDP per capita:	USD 26,755

### Solid waste generation

Total generation:	1,400 ton/day
Waste generation per capita:	1.40kg/person · day
Waste composition:	40% paper, 20% plastic

### Solid waste management

Collection rate:	100%; 2 times per week (recycling 1 time per week)
Recycling:	Separated at source by residents (2 recycling plants)
Incineration:	3 plants (electricity sales amount to 7% of revenue)
Final treatment:	Sanitary landfill
Expenditures:	The budget of the Environment Bureau is JPN 17,600 million (USD 145 million), approximately 3.3% of the general account. Half of the budget for SWM comes from general revenue; user fees account for 12%; user charges are obtained from the sale of “designated bags” (JPN 15/bag (USD 0.12/bag)).

### Major challenges and strategies

Solid waste issues require the understanding, participation, and cooperation/partnership of all members of society than any other environmental issue. Great potential for such partnerships exist in traditional and indigenous local social systems. To draw out this potential, the sharing of many experiences of success and failure, and their contribution factors, among local societies is beneficial. The selection of appropriate technology that is most appropriate or effective depends on each city's situation. Kitakyushu utilises incineration to reduce volume in order to accommodate limited landfill space and stabilizing reclaimed areas by avoiding decomposition of organic waste, as well as consideration of economic benefits from energy utilisation. The amount of solid waste generated per year has increased rapidly due to economic development. The amount of solid waste per capita per day is high, in particular the generation of paper and plastic; therefore, the volume reduction of solid waste is a high priority issue.

Residents actively participate in community activities and recycle paper products (newspapers, journals, packages, other). In addition, residents separate cans, glass, and plastic bottles, which are then collected and utilised as raw materials after pre-processing. Some glass bottles are reused using deposit-refund systems. The city government established a subsidy programme for promoting composting activities by residents. At present, 26,526 households have compost equipment.

Kitakyushu adopted a system for the use of designated bags (clear plastic bags) in 1998. Income from the sale of these designated bags is also used to assist and promote environmental activities in communities. The fundamental process of solid waste management is consensus or agreement in the local community. This decision-making process in Kitakyushu included: (1) Questionnaires to develop dialogue with residents; (2) Meetings with residents during the planning phase through cooperation with neighborhood associations to exchange ideas and information on the feasibility and objectives of fee-based system, benefits and additional responsibilities of new system; (3) Consensus between residents and the city, after which the official agreement was amended by the Kitakyushu City Local Ordinance of Solid Waste Management, and; (4) Advice and assistance for residents' activities by city government officers and volunteers.

In order to effectively and efficiently implement new policies on solid waste management based on local community consensus and common goals, an understanding of the state of solid waste generation, estimation of future need, identification of issues and problems, measures to solve issues, evaluation of the capabilities and roles of local stakeholders, and securing all necessary resources, are required.