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Improving the policy making process in municipal solid waster management: Learning from Minamata-City, Japan

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IMPROVING THE POLICY MAKING PROCESS IN MUNICIPAL SOLID WASTE
MANAGEMENT: LEARNING FROM MINAMATA-CITY, JAPAN

BY

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THESIS

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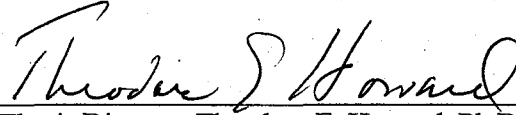
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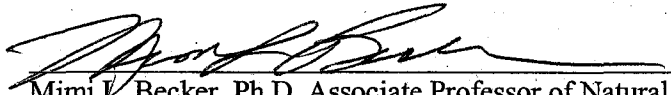
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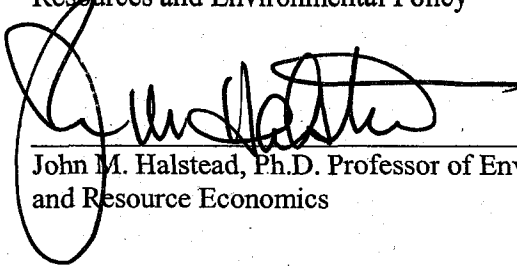
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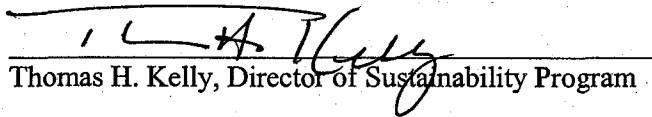
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ABSTRACT

IMPROVING THE POLICY MAKING PROCESS IN MUNICIPAL SOLID WASTE MANAGEMENT: LEARNING FROM MINAMATA-CITY, JAPAN

by

Rika Ikemoto

University of New Hampshire, December, 2006

Many countries, especially industrialized countries, are facing a crisis in municipal solid waste (MSW) problems due to its ever increasing amount and related problems such as limited dumping space, transboundary waste movement, financial pressures, and dioxin problems. In Japan, one of those industrialized countries, while national MSW policies have not appeared effective, some municipalities have established remarkable policies to reduce MSW. Minamata-city, which has a unique experience of environmental pollution, known as Minamta-disease, has reduced waste with the two major MSW policies: a Recycling Program; and the Food-containers Abolition Project of the Women's Committee on Waste Reduction, based on the tragic history. Through the assessment of the two policies in Minamata-city case study, I found the most important factors for a successful policy process in MSW management are: 1) participation of all stakeholders; 2) face-to-face discussion; and 3) power sharing by leading organizations in the decision process. Other factors such as: 4) level of crisis; 5) environmental consciousness; 6) problem orientation and goal clarification are also important. Therefore, to improve the policy process on MSW management issue in a community, professionals can suggest that decision makers and leading organizations have face-to-face discussions with all stakeholders and to share the power with them in the early stages of the decision process. As a basic concept, connectedness of the whole environment must be considered in the design of a MSW management program.

CHAPTER I

INTRODUCTION AND RESEARCH OVERVIEW

For years, I have been interested in 'waste' as one of the environmental problems, especially municipal solid waste (MSW), that we create every day in activities at home, business offices, and public institutions. I have been questioning: What is waste? Why and how does it occur? What problems does it cause? If so, how can we deal with them? Throughout the paper, I address these inquiries.

What triggered my concern about waste was my travels in 1996 to a small, isolated, southern island of Japan with beautiful nature, where I saw local people throw their daily garbage into the nearby forest. I felt something was wrong with that. I wondered how long the forest could sustain accommodating the garbage since the garbage, including non-natural materials, packed in big plastic bags, would not easily return to the earth and would accumulate on the forest floor. What if the forest becomes filled with garbage? Sooner or later, that day will come if they continue this activity. At the same time, I found that the situation on the island was happening all over Japan, and furthermore, all over the world.

In offices, public places, and at home, we throw garbage into trash cans. It seems the right and moral action compared to throwing it on the street, or into forests or rivers. However, where does it go after the trash can is removed from our sight? It will still be somewhere on the earth, buried or burned. What is wrong with these practices? Do these disposal options create any problems? It is recognized that sanitary landfill and incineration contribute to air, water, and soil contamination as well as aesthetic problems. Increasing amounts of waste, including MSW, have become a national concern in Japan with its limited landfill space. Although recycling is a favorable option these days, by itself, it has not solved the fundamental waste problems. If our

current policies of waste disposal cause harmful effects on the environment and human life, they must be changed.

I have been asking myself the questions: What causes waste? How can we prevent it? Seeking the answers, my focus expanded from post-treatment management of waste including technological improvement in final disposal and recycling to our consumption patterns and modern lifestyles as root causes mainly seen in developed countries. In other words, is our current way of resource use appropriate in terms of the environment? Who is in charge of it? Who should take action – governmental bodies, industries or individuals? As for the case on the island above, what shocked me more was that most of my friends felt nothing wrong with the waste disposal behavior of local people; they even thought it was convenient. I realized that it is impossible to solve the problem just by relying on self-consciousness of individuals. Although grassroots activities to encourage individuals to change their behaviors are necessary, a policy as system (e.g. a guideline, rule, regulation, and laws), is required to make people move in the right direction. That is how I came to study the policy process for solving waste problems, focusing especially on MSW that we, ordinary citizens in developed countries, directly contribute.

To establish a desirable policy, the policy making *process* must be improved. As an important element of the policy making process, Clark (2002) suggested that solving natural resources conservation problems can not ignore the social and cultural context, that is, people should be included in problem solving. Placing this concept at the center, I conducted the research on the policy process in MSW management with an empirical case study in Minamata-city, Japan.

My primary objective of this study is to assess the policy-making process (hereinafter, policy process), especially focusing on the decision-making process (hereinafter, decision process) such as data collection, goal setting, and participation in municipal solid waste management policy. My integrated research question is: **how can the policy-making process in municipal solid waste management be improved?** To answer the question, I examine how the theory of policy process works in a real situation through a case study of Minamata-city's MSW

management policies, and explore factors that led to a successful policy establishment. I finally assess whether those factors can be generalized or adapted in different contexts.

Studying waste is important in that waste can be used as an indicator of our consumption behavior – how much waste we are creating shows how much we are consuming. To study waste is to question improper consumption patterns. I suspect that the many environmental problems are caused by our consumption patterns. Thus, waste can be an entrée to solving many environmental problems. Tackling the waste problem leads to solution of many environmental problems. MSW is directly connected to ordinary citizens' consumption pattern. It is my challenge to explore how to influence individuals' behavior in their consumption patterns through policies.

Because MSW is generated by ordinary citizens' activities, they must be involved in the policy processes for solving MSW problems. Since national policy is too broad to influence the behavior of individuals – the root cause of MSW generation – I will focus on smaller scale operations, such as municipal and community levels. Local municipalities can approach citizens more easily and can also incorporate concepts of national policies into their own policies. Therefore, the role of local municipal bodies is important in MSW management policies because they actually operate closer to individuals. In this sense, I focus on MSW policies in municipalities rather than national policies although the national policies are needed as a broader framework.

I chose Minamata-city, Kumamoto-prefecture, Japan, as a case study site because of its great efforts on waste reduction as well as in environmental protection. I focused on the two MSW management policies – 1) a Recycling Program with 19 Source Separations (hereinafter, Recycling Program); and 2) the Food-containers Abolition Project by Women's Committee on Waste Reduction (hereinafter, Women's Committee) (See "Methods" for further discussions). As well as the uniqueness of its waste management policies, I was interested in the city because of its past experience with environmental pollution, the well-known 'Minamata-disease' (a disease caused by methyl-mercury pollution) which is also one of the four largest industrial pollution

problems in Japan¹. While I was familiar with the city through the Minamata-disease history I learned in public schools, it was impressive to know that the city is regenerating as an environment-friendly city. I also once lived in the city just adjacent to Minamata-city, knowing little about how the tragic experience deeply influenced society. Since the policy process in environmental conservation program needs to include social context as described above, I believe Minamata-city's case serves as a good model to show the connection between social aspects and solving environmental problems as social problems.

In a broader view, my focus is on industrialized countries such as OECD countries in that their consumption patterns and occupation of natural resources have harmed the environment of developed countries as well as their own countries by generating huge amounts of waste. The spatial boundary of the case study is narrowed down to a city (Minamata-city) in Japan, one of the industrialized countries. As for temporal boundary in the case study, I focus the period of the two focused MSW policies of the city, that is, since the first policy, the Recycling Program, was initiated in 1992 until the present.

I am doing this research for my personal and academic interest as a thesis project for the master's degree in Environmental Conservation to support a future career as a policy-maker in the practical world. My interest originally comes from my personal observation through my daily life in Japan, one of the highly developed countries: I have wondered why we are creating this much waste and why people do not care about this? My perspectives concerning waste and life, which seems to be different from others, might come from my education at home. Thus, my perspective tends to be as a citizen rather than a scientist. While it makes me focus on real, practical solutions and understanding and including citizens' perspectives in the study, I admit that I lack professional experience in both policy sciences and ecological sciences.

I hope my study will offer a different approach from the conventional policies in MSW

¹ The four major environmental pollution problems in Japan: Minamata-disease, Minamata-disease in Niigata prefecture, Itai-Itai disease, and Yokkaichi Zensoku (Kojirin 1983).

management and will give some hints for improving the policy-making processes to solve the problem of municipal solid waste in the future.

Methods

Research Methods Overview

This research is a qualitative study to assess policy processes in municipal solid waste (MSW) management. I used the *policy sciences approach* of Harold Lasswell and colleagues (Clark 2002; Clark et al, 2000) as a basis to frame the entire research.

Because the research aimed at resolving *how* and *why* questions, I chose case study as a suitable method for data collection and analysis (Yin 2003). I conducted the research via following steps. First, I designed my entire research by creating research questions to answer the *ultimate* research question stipulated above (see Appendix C: Research Questions). Second, I conducted a literature review. I first studied waste, especially MSW problems, to establish a sound understanding of the issue from the current situation and projection of MSW problems, the root cause, possible solutions, and policies established with their effects (Chapter II). Beginning with the definition of waste, I collected data about municipal solid waste, targeting developed countries including European countries, the United States, and Japan. To grasp general facts about waste and MSW, I described the current situation of MSW, the problems of MSW, and its management policies. Next, I studied the policy process in natural resources conservation in general to understand the concept and the framework to be used in policy process analysis (Chapter III). I reviewed several case studies to evaluate how theory works in real cases in natural resources conservation and explored how the concept can be applied to MSW management policies. Through the literature reviews, I established the criteria to assess the policy processes of Minamata-city case study (Appendix C). Third, I conducted an empirical study of two MSW management policies in Minamata-city, Japan. The objective of the case study was to assess

decision making process of the two focused policies, determining what factors led to the success of the sound policy making process. I first conducted a descriptive study (Chapter IV), mapping the Social Process and the Decision Process of the two policies. Based on the descriptive study, I then assessed the policy processes and evaluated the findings (factors) with the criteria whether they can be generalized as successful factors of MSW management policy-making process (Chapter V). For detailed process of the case study, see “Process of Minamata-city Case study” later in this section. As a final step, I developed conclusions, answering my ultimate research question as stipulated in the “Introduction”: How can the policy-making process in municipal solid waste management be improved?

Process of Minamata-city Case Study

Site Selection and Data Collection. To select the site, I searched on-line for municipalities making efforts to improve waste reduction as well as the entire environment. To get general ideas about cities/towns with good environmental efforts, on-line information about ‘The Environmental City Contest’, in which municipalities are assessed by their efforts to improve the environment held by a non-profit organization, Kankyo Shimin (<http://www.kankyoshimin.org/jp/mission/ecocity/ecocap/index.html>), was a great help. Two municipalities were originally nominated: Minamata-city in Kumamoto-prefecture and Kamikatsu-cho town in Tokushima-prefecture due to their unique policies on MSW management emphasizing waste *reduction* and their overall environmental efforts as described on their official websites and some unofficial websites. Minamata-city was finally chosen because of its size, accessibility, access to key informants, and its high success in waste reduction and recycling rate. In addition, the city has performed well in the Environmental City Contest described above – Minamata-city ranked at least fifth every year since the first Environmental City Contest was held. It won first prize in the 4th contest in 2004 (<http://www.kankyoshimin.org/jp/mission/>

ecocity/ecocap/index.html). Minamata-city, with a population of 30,000, looked more appropriate in generalizing the policies to other contexts of both smaller and bigger communities than the latter town (population of 2,700). While the location of Kamikatsu-cho town was very inconvenient, requiring a lot of travel, Minamata-city was at the border of Kagoshima-prefecture where I live, only two hours drive away. Furthermore, I had more contacts with key informants in Minamata-city than in the other town where the key informant was limited to one city official who was in charged of the policy, and no local people were available.

To determine policies to be studied in this case study, and find key informants to be interviewed, I first contacted Environmental Measurement Section (hereinafter, Environment Section) in the Minamata-city government which is responsible for waste management via two subsections: Environmental Planning Office and Environmental Clean Center. Through the two subsections and interviewees, I attained documents relevant to the two policies. The primary sources included individuals' memoranda, photos, and unpublished reports. The secondary sources included official documents such as city brochures, minutes, meeting documents and agreements, statistical data, and pieces of newspapers articles. To gain a general understanding of MSW policies in the city, I also contacted the vice chief of Environmental Planning Office (as of 2000), who wrote a report for a workshop, *The Model Environmental City Project in Minamata-city* (http://www.shonan.ne.jp/~gef20/J/meeting2000_minamata.html).

I held focused interviews with key informants who were involved in the two policies (see Appendix A: Written Consent Form for a copy of the informed consent, and Appendix B: Focused Interview Form for the interview form applied to the subjects of this study). I contacted them through the two subsections of Environment Section. For the first focused policy, the Recycling Program, I interviewed a city official, who was involved in the entire project as a recycling program coordinator. For the second policy, the Food-container Abolition Project, I wrote a letter to members of the Women's Committee to recruit interviewees, especially those who were involved in the project through the committee secretariat located in the Environmental Planning

Office. I received acceptance for interviews from three members. To gain the overview of the background of the two focused policies, I contacted the previous mayor (hereinafter, ex-mayor), who was said to have greatly contributed to rejuvenating the city at that time. For this interviewee, I had a contact through a non-profit organization I had worked for before. Therefore, before visiting the site, I fixed interview with six informants. However, through several interviews, one more important key participant emerged for the second policy: a section head of the Environmental Section at that time. I directly visited his office in the city government and made an appointment for an interview. In addition, as I found it necessary to get further information about the second policy process after I left the site, I contacted a city official who worked for the secretariat of the Women's Committee during the project for telephone interview. Thus, I eventually interviewed eight participants (see Table 1-1 for the interviewees' role). The interviews were held in open-ended style, and interview time varied between 40 minutes to one and half hours.

Data Processing and Analysis. At the first stage of the case study, I conducted a descriptive study with secondary data (e.g., published books, governmental documents, and newspapers) and primary data from interviews, based on the policy process analytic framework. I determined the specific MSW problem which triggered the two focused policies, mapped social and historical contexts to understand participants' perspectives at that time (for this, I used six interviewees among all). For this step, I tabulated the interview record by the research questions for each policy (Appendix D: Interview Tabulation Form), reviewed patterns of answers by interviewees in each question (whether there were any similarities or differences between answers from different participants). I conducted the Decision Process Mapping for the two focused policies in terms of seven functions to analyze the decision making process of those policies systematically; I described how well each decision function met the 'criteria' (See Table 3-1 in Chapter III for the seven decision functions) and explore which decision functions were most

emphasized in each of the two policies. Next, I developed findings based on the descriptive study in terms of my research questions, in which I evaluated how soundly each policy was conducted with my own criteria (see Appendix C for the criteria) and determined the factors that appeared influential to the successful establishment of the two policies. The summary of the descriptive study and the findings are reported as the "Case Study Report: Summary and Findings" in Chapter IV.

Overall Assessment

By comparing my case with other studies on MSW management policies and policy processes on natural resources conservation programs, I examine the factors that led to the successful policy making processes in Minamata-city case study. I further explore whether they can be applied in other contexts. I then conclude with what was learned from the case study in terms of successful factors to improve policy process in MSW management in a community to answer my primary research question.

Table 1-1. Interviewees' Role

• Recycling Program (1992-1994)

	Name (anonymity)	Title	Roles
1	Ex-mayor	city councilor (- 1993)	Involved in the rejuvenation of the society based on the environmental policies: <ul style="list-style-type: none"> • attended the Earth Summit (1992) • presented "the Declaration on the City Development with Valuing the Environment, Health, and Welfare" (1992) • involved in "Declaration on the Establishment of a Model Environmental-friendly City" (1992)
3	Section Head, Environment Section	N/A	N/A
2	Vice Chief, Environmental Planning Office	N/A	(Provided overview of the policy as the vice chief as of 2000)
4	Recycling Program Coordinator	a city official, City Planning Sec. (-1992) /Health & San- itation Sec. (1993-)	Involved in the entire project from the planning (as a member of the Task Force) to the implementation of the recycling program as a program coordinator (transferred into Health & Sanitation Sec.)
5	Secretary, Women's Committee	N/A	N/A
6	Women's Committee 1	Citizen	participated the recycling program
7	Women's Committee 2	Citizen	participated the recycling program
8	Women's Committee 3	Citizen	participated the recycling program

• Food-containers Abolition Project (1997-2000)

	Name (anonymity)	Title	Roles
1	Ex-mayor	Mayor (1994-2002)	Contributed the resolution of the Minamata-disease problem: <ul style="list-style-type: none"> • Official Apology to the Minamata-disease patients • Advocated "Moyainaoshi" Contributed the environmental project promotion in the city administration, including waste management issue
3	Section Head, Environment Section	Assistant man- ager (1994) /later, the sec- tion head, En- vironment Sec.	Contributed the environmental project promotion in the city administration, including waste management issue (as the head of the Environment Sec., he was at the position to look over the waste reduction and the recycling program):

Table 1-1. Continued.

			<ul style="list-style-type: none"> • Established the Women's Committee and devised several projects of the committee • Further promoted the recycling program, adding new materials to be separated. <p>Planned and conducted a various environmental events</p>
2	Vice Chief, Environmental Planning Office	N/A	(Provided overview of the policy as the vice chief as of 2000) Mainly worked for the ISO 14001 from 1998 in Environmental Measurement Dept.
4	Recycling Program Coordinator	N/A	N/A
5	Secretary, Women's Committee	secretary of the Women's Committee (city official, Environmental Planning Office)	Put the establishment of the Women's Committee into practice under the assistant manger. Running the committee as a secretariat, contributed to the accomplishment of the Food-containers Abolition Project with the two official agreements
6	Women's Committee 1	Member, the Women's Committee	Accomplished the Food-containers Abolition Project; Coming from a Minamta-disease patients supporting group, concerned the recovery of relationship between ordinary citizens and the patients
7	Women's Committee 2	Member, the Women's Committee	Accomplished the Food-containers Abolition Project
8	Women's Committee 3	Member, the Women's Committee	Accomplished the Food-containers Abolition Project; The head of the "Fujin-kai" (a women's institute)

CHAPTER II

MUNICIPAL SOLID WASTE PROBLEMS

In this chapter, I discuss waste in detail, focusing on municipal solid waste (MSW) – its definition, history, statistical trends in amount and compositions, problems, and root causes. I also review of national policies of developed countries such as the United States of America, nation of Western Europe, and Japan.

Background: MSW Problems and Policies

What Is Waste and Why MSW?

What is waste? While many organizations such as OECD and EU and researchers have defined waste in their own ways (ETC 2006a; Drackner 2005; Melosi 2005), it can be integrated in a definition as non-primary *materials* for which the holders have no further any use, which they either intend to or are required to discard, or have already discarded (ETC 2006a). Also, waste may be generated during the extraction and processing of raw materials into intermediate and final products, during the consumption of final products, and during any other human activity. While the definition of MSW varies slightly among countries², it generally implies all non-hazardous *solid* waste generated by *community* activities except for industrial and agricultural waste. It is unique among environmental problems because it is what ordinary citizens directly contribute.

² In the United States, the EPA defines MSW as “all community wastes except for industrial process wastes and agricultural wastes (Tchobanoglous et al. 1993:40)”. In Japan, ‘General Waste’ except for human waste can be recognized as MSW, which is defined as “waste except for industrial waste (Kankyosho n.d.a)”; In Germany, MSW includes ‘residential, bulky, commercial, light industrial, and yard and garden waste (Vehlow 1996)’.

Why is MSW important? Despite its negative impacts on the environment and human society, it has had a lower priority for a long time compared to the industrial waste. Hazardous waste prevention and control have been largely discussed, and a great progress made with international/domestic regulations in the United States and the other developed countries³. It may be because of MSW represents only a small proportion of total waste (Table 2-1). However, solving MSW problem is important for the entire waste problem in that MSW caused by consumers will influence the trends of industrial waste.

On the other hand, the progress of solving MSW has been at a snail's pace. Although many nations have been making efforts to solve MSW problems, the amount of MSW is still increasing or at least not decreasing over the last decade (Table 2-1).

Trends in MSW

Waste has changed as the society developed, especially in industrial countries such as the United States, Western European countries, and Japan (Tchobanoglous et al. 1993; Melosi 2005; Louis 2004). Waste has increased, and the composition has become more complex.

As shown in Table 2-1, along with the economic and cultural changes during the high economic growth in mid-20th century, the amount of MSW has drastically increased. In the United States and Japan, the total amount more than doubled, and per capita also increased approximately 60% between 1960s and the present (Table 2-1; Figure 2-1; Figure 2-2). In Europe, the total amount increased 10% between 1990 and 1995, and further increases are expected (EUROPA 2006). According to the data from the United Nation Environmental Programme (UNEP), many industrialized countries create 1 to 2 kg of MSW per person each day (Table 2-2; Figure 2-3).

In terms of the composition, packaging waste has increased its share in MSW to

³ *Silent Spring*, published in 1962, inspired public awareness; UNEP Basel Convention that entered into force in 1990 played a role of regulating hazardous waste (UNEP n.d.)

approximately half the volume (Table 2-1) (Tchobanoglous et al. 1993; Melosi 2005). Newly emerged materials into the waste stream such as plastics made recycling more difficult than glass or paper because of its structural and chemical complexity (Melosi 2005).

Table 2-1. MSW Status and Trend (Europe, USA, Japan)

Countries	Europe	Germany
Population	-	82551000 (2005)
Country size	-	357,030 km ²
GDP	-	2,072,162 million Euro
MSW (total)	252 million t. ⁴	52.6 million t. (2003)
MSW (capita/day)	1.4 kg (2005) ⁵	1.6 kg (2002) ⁶
MSW portion	14%	13.8% (2002) ⁷
MSW trend	10% increased (1990-1995); will be 45% up (1995-2020) (EU-15+Norway&Iceland) Per capita: 476 to 580 kg (1995-2003): <u>22% up</u>	43.5 to 52.6 million t. (1995 - 2003)
Management option	-	Recycling (30%); incineration (25%); landfill (45%) in 1993
Recycling trend & waste reduction	-	10% (1987), 30% (1993), 60% (2006)
Packaging waste in MSW	Still increasing: 7 to 10% (1997-2001)	Half in volume; 1/3 in weight in MSW (1990)
Remarks	-	Highly densely populated country with No.1 GDP in Europe

⁴ MSW occupies approximately 14% of total waste. Over 1.8 billion tons of waste are generated each year in Europe.

⁵ Many Western European countries annually create 500 kg (per capita).

⁶ Annual per capita: 590 kg.

⁷ Total waste: 381 million tons (2002).

Table 2-1. Continued

Countries	Denmark	Sweden
Population	5,387,000 (2005)	8,956,000 (2005)
Country size	43,090 km ²	449,960 km ²
GDP	162,099 million euros	232,716 million euros
MSW (total)	3.6 million t. (2003)	4.2 million t. (2003)
MSW (capita/day)	1.8 kg (2002) ⁸	1.3 kg (2002) ⁹
MSW portion	Household: 24% ¹⁰	-
MSW trend	2.0 million t. (1980), 3.0 million t. (1995), 3.6 million t. (2003) Household: increased by 17% (1994-2003) (Following stat: household)	3.3 million t. to 4.2 million t. (1995-2003) Household: increased by 27% (mid.1995-2005)
Management option	Recycling (31%); Incineration with energy recovery (60%); Landfill (6%) (2003)	Recycling & composting (20%); Incineration (53%); landfill (27%) (1994)
Recycling trend & waste reduction	Recycling (22% to 31%); incineration with energy recovery (58% to 60%); landfill (20% to 6%) (1993-2003)	Recycling & incineration for energy generation has increased faster, resulting in a low amount of disposal to landfill (9 % of MSW) (2004)
Packaging waste in MSW	PKG waste: 6% of all waste	-
Remarks	Rate of landfilling has decreased drastically.	-

⁸ Annual per capita: 660 kg.

⁹ Annual per capita: 470kg.

¹⁰ Total volume of waste distribution: 1) building and construction sector 26%, 2) households 24%, 3) industry 21%, 4) institutions/trade and offices 10%, 5) power plants 10%, and 6) Wastewater treatment plants 9%. Household waste constitutes of domestic, bulky, and garden waste.

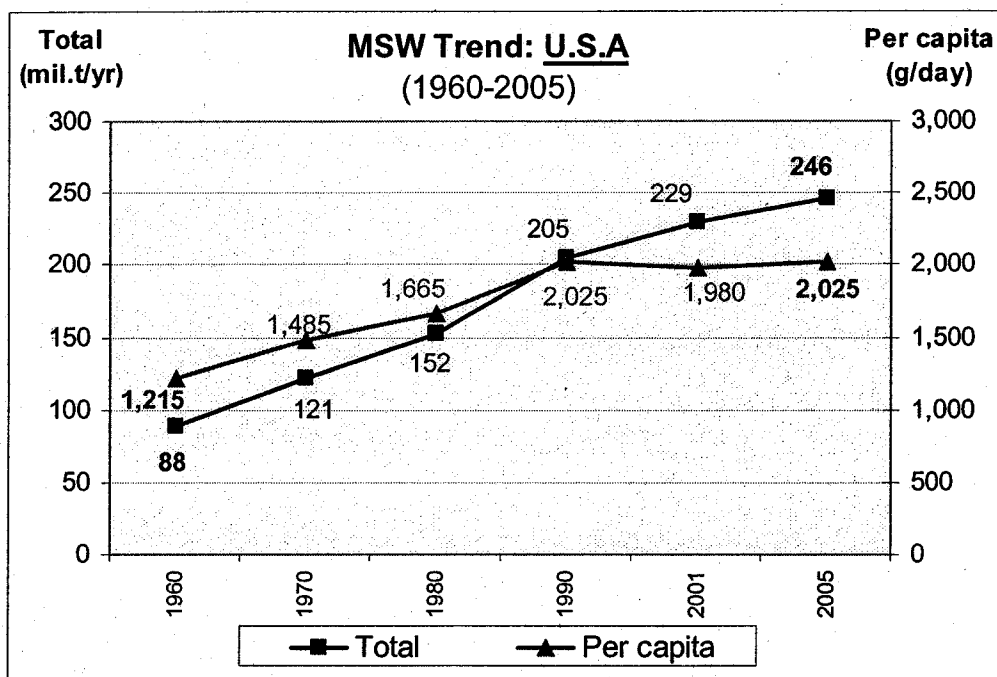
Table 2-1. *Continued*

Countries	USA	Japan
Population	298,444,215 (2006)	127,463,611 (2006)
Country size	9,631,420 km ²	377,835 km ²
GDP	\$12.49 trillion (2005)	\$4.664 trillion (2005)
MSW (total)	236 million t. (2003)	51 million t. (2003)
MSW (capita/day)	2.0 kg (2003)	1.1 kg /day (2003)
MSW portion	1.5%	11 % ¹¹
MSW trend	121 million t. to 236 million t. (1970-2003): <u>doubled</u> Per capita/day: 1.5kg to 2.0kg (1970-2003): <u>60% up</u>	16.2 million t. to 52.1 million t. (1965-2001): <u>tripled</u> Per capita/day: 693g to 1.1kg (1965-2001): <u>60% up</u>
Management option	Recycling (30.6%); incineration (14%); landfill (55.4%) (2003)	Recycling (16.8%); incineration (78.1%); landfill (3.6%) (2003)
Recycling trend & waste reduction	Recycling rate: 7% (1970), 16% (1990), 30.6% (2003)	Recycling rate: 10.7% to 16.8% (1992-2003)
Packaging waste in MSW	Half of the volume, 30% of the weight of municipal waste	Approx. 60% in volume; 25% in weight
Remarks	-	Domestic waste: 66.9% of all MSW

Sources: BMU 2006; CIA 2005; Concern Inc. 1988; Danish EPA 2004; 2005a; 2005b; EEA 2004; 2005a; EPA 2006a; ETC 2004; 2006b; Hjelmar 1996; Kankyosho 2000; 2005a; 2005b; n.d.c; Miller 2004; Sakai et al. 1996; Schreurs n.d.; UNEP 2006; Vehlou 1996; Yamaya 2000

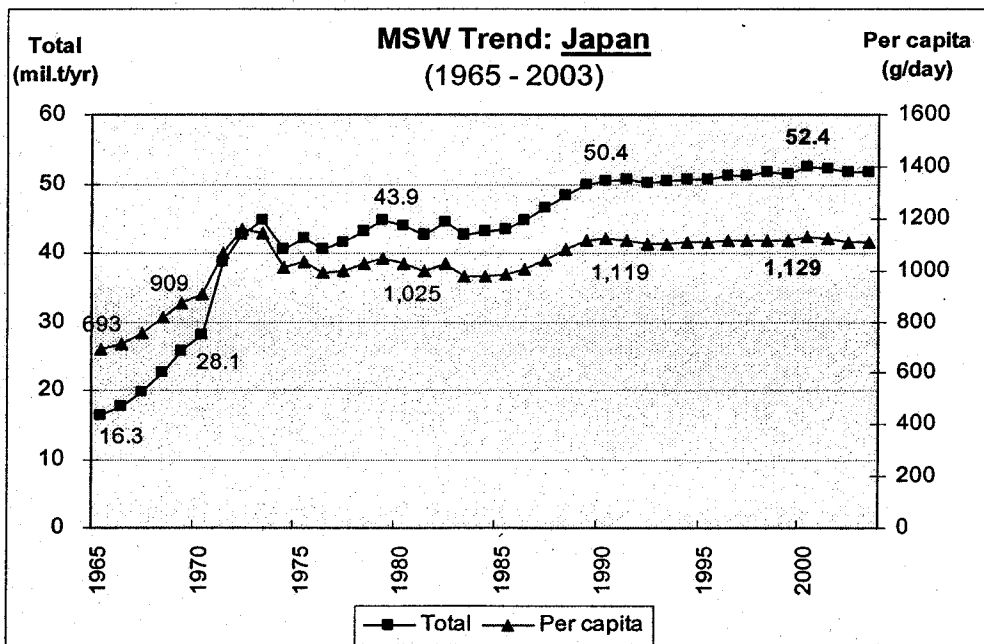
¹¹ MSW: 50 million tons; Total waste (General waste and Industrial waste): 450 million tons.

Figure 2-1. Waste Generation Transition in the United States



Source: EPA 2006a

Figure 2-2. Waste Generation Transition in Japan



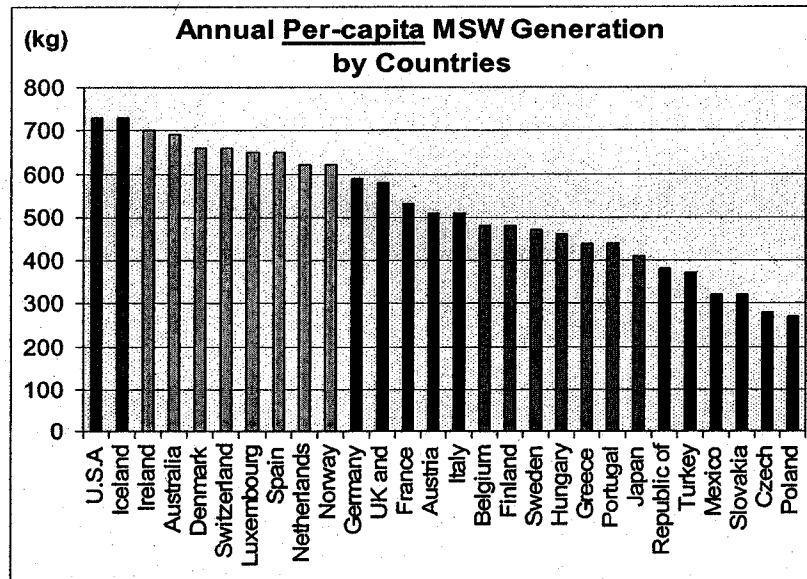
Source: Kankyocho n.d.c.

Table 2-2. MSW Per-capita Generation (2002)

Countries	Per-capita (kg)
U.S.A	730
Iceland	730
Ireland	700
Australia	690
Denmark	660
Switzerland	660
Luxembourg	650
Spain	650
Netherlands	620
Norway	620
Germany	590
UK and Northern Ireland	580
France	530
Austria	510
Italy	510
Belgium	480
Finland	480
Sweden	470
Hungary	460
Greece	440
Portugal	440
Japan	410
Republic of Korea	380
Turkey	370
Mexico	320
Slovakia	320
Czech Republic	280
Poland	270

Source: UNEP 2006

Figure 2-3. MSW Per-capita Generation (2002)



Source: UNEP 2006

Problems of MSW

Why should we care about waste? It is generally recognized that waste, and its improper treatment, causes harmful effects on the environment including air, water, and soil contamination, and eventually human health, as well as aesthetic problems (Tchobanoglous 1993). With its unique nature that it does not dispersed from where it is disposed “unlike water-borne and air-dispersed waste (Tchobanoglous 1993)”, *solid* waste will remain in mostly the same form in the same place in the future when buried or will remain as more concentrated toxic ash when burned. Although humans have struggled to make waste at least disappear from sight by improving waste management systems such as improving sanitary landfills and incinerations, many problems still remain. Landfills contaminate groundwater by leachate and emit methane gases. Toxic emissions and resin ash from incinerations contain dioxins and contaminate land and air (Tchobanoglous 1993; Consern. Inc. 1988). The ever-increasing amount of waste is now creating serious problems due to limited dumping space in some industrialized nations with small land area such as Japan and Germany. Increasing amounts of waste over landfill capacity has encouraged transboundary movement nationwide and internationally (Biocycle 2005; ISWA 2006; BAN 2006), mostly from rich countries to poor, developing countries especially in Asia such as China, India, and Bangladesh (BAN 2006).

In addition to impacts on human health, waste damages the natural environment. Degradation of the habitat corrupts the food chain. Disposed waste materials such as plastic trap natural creatures (Consern. Inc. 1988). These impacts on the natural system eventually result in the loss of human health, welfare, and life.

Root Cause: Unsustainable Consumption Patterns

Waste is the consequence of our consumption patterns. This is now world-wide recognition that unsustainable consumption patterns, especially in industrialized countries have

caused human and environmental problems around the world¹². Studies argue that there is a connection between unsustainable consumption patterns and waste problems in industrialized countries (Melosi 2005; Orr 2002; Flavin et al. 2004).

In fact, according to the 1991 report of the United Nations Development Programme (UNDP) (1996), it is estimated that more than half of world annual urban waste of 720 billion tons is generated by developed countries. UNEP (2002)¹³ and Worldwatch (2004) document how a small portion of world's population (10 - 20%) utilize more than half of the world's resources and wealth (also see Table 2-3, Figure 2-4).

Those studies indicate that a small portion of world population forms the consumer class, mostly in industrialized countries, and produces the greatest share of waste due to its unsustainable consumption patterns. MSW is especially deeply related to individuals' consumption behavior. In this sense, MSW problem is a *social* problem in addition to a technological and environmental problem. Therefore, the fundamental solution of influencing individuals' consumption patterns requires appropriate policies.

In the next section, I look at how the MSW problems have been treated by means of national policies.

¹² Agenda 21 identified unsustainable consumption and production, especially by industrialized countries, as the major cause of global environmental deterioration in the Chapter 4 "Changing Consumption Pattern" (UNSD 2004).

¹³ The richest 20% of the world's population accounts for 86% of total private consumption expenditure, and consumes 58% of the world's energy, and 45% of all meat and fish.

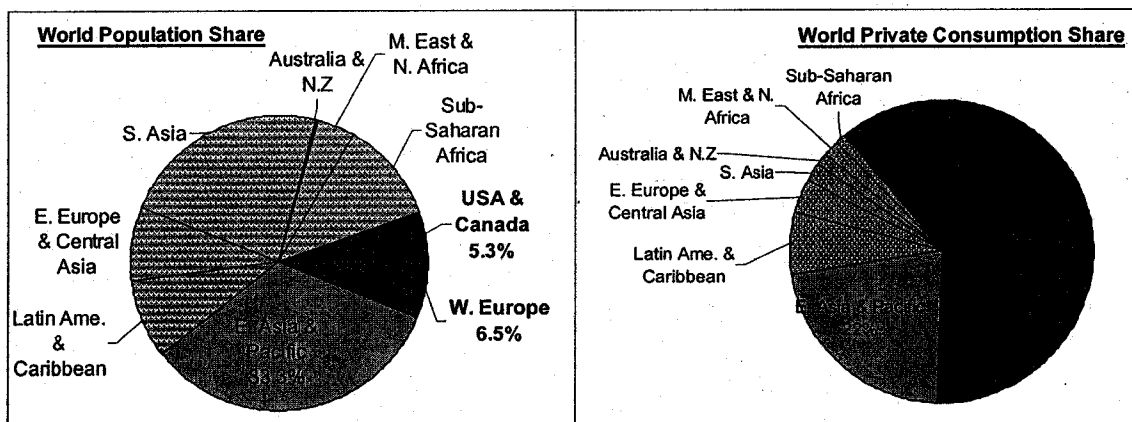
Table 2-3. Consumer Spending and Population by Region (2000)

Unit: percent

Region	Share of World Private Consumption Expenditures	Con. Rank	Share of World Population	Pop. Rank
USA & Canada	31.5	1	5.2	7
W. Europe	28.7	2	6.4	6
E. Asia & Pacific	21.4	3	32.9	1
Latin Ame. & Caribbean	6.7	4	8.5	4
E. Europe & Central Asia	3.3	5	7.9	5
S. Asia	2	6	22.4	2
Australia & N.Z	1.5	7	0.4	9
M. East & N. Africa	1.4	8	4.1	8
Sub-Saharan Africa	1.2	9	10.9	3

Source: Worldwatch 2004

Figure 2-4. Consumer Spending and Population by Region (2000)



Source: Worldwatch 2004

Policy Trend of MSW: Post-management to Waste Prevention

In reviewing the trends in waste management in industrialized nations, researchers have found that management has depended on the post-management treatments such as improving sanitary landfill, incineration, and especially promoting recycling system (e.g, EPA 2006a; Hjelmar 1996; Louis 2004; Melosi 2005; Sakai et al. 1996; Vehlow 1996). As shown in Table 2-1, many countries have shown great achievement in resource recovery over years by adopting new laws and regulations. Other studies focused on technological solutions such as biodegradable plastics (e.g., Agamuthu and Faizura 2005) and food disposers (e.g., Marashlian et al. 2005; Tchobanoglous et al. 1993).

However, such post-management treatments and technological solutions still leave a lot of unresolved problems despite their short term advantages. Any of these solutions can not be totally harmonized with natural systems, but merely shift the problem temporally (to the future) and spatially (victimize relatively weak societies, low-income societies) (Melosi 2005). Such single solution is sometimes just a shift of one problem to another. Furthermore, as Germany's case showed¹⁴, the danger of such one-method solution is that it might divert peoples' attention from the real problem, releasing people from guilt of their excessive consumption. In fact, the amount of MSW is still increasing or at least not decreasing, and landfill and incineration as disposal option are still dominant (Table 2-1).

Therefore, the most effective way to solve MSW problems is to actually reduce the input rather than to treat output of waste, which is deeply related to production and consumption patterns.

Among industrialized countries, Japan, facing serious waste problems, recently began to turn towards the fundamental solution, that is, toward waste *reduction*. However, national policies

¹⁴ Despite its remarkable achievement in the recycling rate, DSD had some criticisms. The system is not for reducing waste but a merely good recycling system. The system itself may encourage consumers' 'throw-away' habits – consumer might think buying the disposable products of DSD labels are good for the environment. That resulted in the increase of the use of disposable beverage (CLAIR Jun/2001b).

remain unchanged. What solutions can be found under the specific cultural and geographical context in Japan? The next section outlines the MSW trends and national policies in Japan.

National Framework, Japan

Along with the rapid economic growth from mid-1960s, Japan has increased its MSW generation (Kankyosho n.d.b.; Yamaya 2000) As shown in Figure 2-2, both total and per capita waste amounts increased from 1960 and showed rapid increases up to a peak in 1990: total generation increased at approximately 10 million tons every 10 years; each individual currently create 1.1 kg every day which is increased by 60% from 1960 (also see Table 2-1).

The related problems such as limited landfill space, illegal dumping, and dioxin problems have become more serious. For example, the remaining term for landfill space is only thirteen years as of 2003 (Kankyosho 2005b). A serious dioxin problem was discovered in a part of Japan in 1995: the high level of dioxin coming from set of simple incinerators heavily damaged the health of the residents (<http://www3.airnet.ne.jp/dioxin/index.html>). In 1990, 13 years of illegal disposal of hazardous industrial onto an island of Hyogo-prefecture was detected, which contaminated the land and nearby sea (<http://www.teshima.ne.jp/blog-archives/000001.html>).

Yamaya (2000:182) attributed waste problems as a consequence of distortion of economic systems and consumption patterns after the World War II, which transformed society into a mass-production, mass-consumption, and mass-disposal system ('one-way' society).

Facing such problems and recognizing such social and economic system as a root cause, Japan has developed policies in waste management. As did most industrialized countries, Japan adopted a 'waste management hierarchy' philosophy¹⁵, putting the top priority on 'waste prevention' (Tchobanoglous et al. 1993; Sakai et al. 1996). Furthermore, it recently stepped forward to the big challenge of more sustainable waste management by adopting the philosophy

¹⁵ 1) waste prevention/ minimization, 2) material recovery, and 3) safe disposal (= incineration and landfilling) (refer to Tchobanoglous et. al.1993, Sakai et al. 1996a).

of 'cyclical society'¹⁶ as opposed to the current philosophy of 'throw-away' society, having learned from Western European countries such as Germany (Schreurs n.d.; Yoshida 2004; Kankyosho 2005a). According to this philosophy, legal regimes for material recycling were developed under the Environmental Basic Law (1994) and the Basic Law for Establishing a Recycling-Based Society (2000) as a basic framework (Figure 2-5).

However, it is uncertain how well the legal system has worked to comply with the concept. While the recycling rate of some specific materials increased with some recycling laws¹⁷, significant reductions in the generation of MSW have not obtained. Total and per capita MSW amount has remained flat between 1995 and 2003 (Table 2-1; Figure 2-2). Incineration dominates waste disposal options (Table 2-1). The recycling rate also remains low compared to that of Western European countries and the United States (Table 2-1). Several defects exist. For example, unlike EU's Packaging and Packaging Waste Directive of 1994¹⁸ (EEA 2004; EUROPA 2005) and Germany's Packaging Ordinance of 1991¹⁹ adopting "producer responsibility", the Recycling Law of Containers and Packaging of 1995 puts fewer burdens on industries in terms of responsibility and cost (Yoshida 2004). Under the uneven distribution of responsibility between the industries and municipalities²⁰, municipalities are overwhelmed by waste materials and

¹⁶ The concept is reviewing the conventional socioeconomic system of 'mass-production, mass-consumption, and mass-disposal' and changing the social and economic structure to the recycling based one to save limited resources and reduce impact on the environment (Yoshida 2004; Schreurs n.d.)

¹⁷ Steel and aluminum cans achieved 80 % of collection in 2001 and 45 % for PET bottles in 2002 (Yoshida 2004:83-91); home appliance such as TV, air-conditioners, and refrigerators are collected at 65 – 80% (Kankyosho n.d.b)

¹⁸ Packaging and Packaging Waste Directive (94/62/EC) (amended into Directive 2004/12/EC) covers all packaging placed on the market in the Community and all packaging waste, whether it is used or released at industrial, commercial, office, shop, service, household or any other level, regardless of the material used. (EUROPA 2005)

¹⁹ The ordinance with its pioneering concept of 'producer responsibility' induced the private production companies to create a system with establishing a company, the "Dual System Germany (DSD)" under which companies are to collect their own packaging materials.

²⁰ Under the Recycling Law of Containers and Packaging, producers, municipalities and consumers must share the responsibility and cost of the recycling of waste containers and packaging (Yoshida 2004).

1) Consumer – Separation of the waste ready to be disposed.

financial pressures while the law gives few incentives to manufacturers to reduce, reuse, and recycle their packaging products. Municipalities are responsible for collection and disposal under the law of Japanese waste management (Kankyosho 2006). By encouraging further production and consumption of packaging products especially plastic bottles²¹, the law eventually resulted in the phenomena of 'mass-production', 'mass-consumption', and 'mass-recycling' (Yoshida 2004). Also, unlike Europe and the U.S., Japan does not have a deposit system for recyclable materials which would be a good incentive for consumers to recycle (CLAIR Jun/2001a; Aug/2001; Sep/2001).

While the national policies remain unchanged, some municipalities such as Minamata-city have shown remarkable success (Yamana 2000), indicating that municipalities play important roles in solving MSW problems. It is, in part, because MSW is caused by individuals. As the EU and Germany's cases showed that while national policies are effective in changing industrial activities, it may be difficult to influence public behaviors through such broad frameworks. In fact, the waste hierarchy mostly focuses on product manufacturing sector despite the concept of changing the public's attitude towards consumption (Sakai et al. 1996). Therefore, for the fundamental solution of MSW problems, smaller scale solutions such as municipal-level approaches may be required.

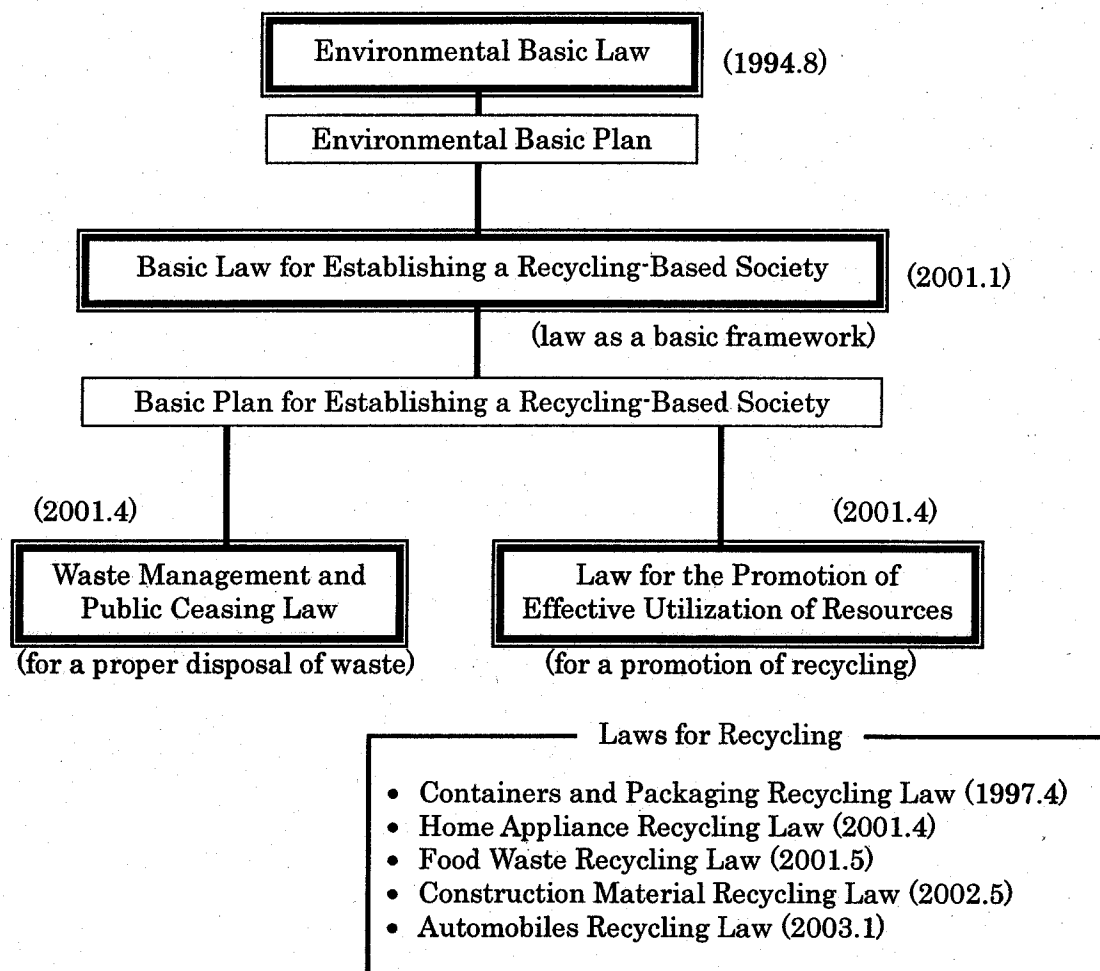
There are some keys to solving MSW problems. First, waste *reduction* at the source rather than management of waste already generated should receive more emphasis. Second, technological solutions can help to solve *output*, that is, reduction of hazardous waste in industrial process and unsustainable disposal of waste, but it does not help to reduce waste at the source.

-
- 2) Municipalities – collection, transportation, and separation.
 - 3) Industries – recycle of the collected packaging waste.

²¹ Before the Recycling Law of Containers and Packaging was enacted, 500 ml plastic bottles were restricted voluntarily by the productions. However, because the law set the responsibility of collection of plastic containers on municipalities, they lifted the embargo of the small plastic bottles which doubled between 1997 and 2002 (Yoshida 2004:83-96).

For that, the focus should be put on *input* as related to our current consumption patterns. Therefore, the social aspect of MSW management should be included in policy making process. Third, as individuals are greatest generators of MSW, changing individuals' behavior through policies is inevitable if management is to succeed. Fourth, while national level policies work as an entire framework, municipalities play a more important role in involving individuals in their policy processes. The findings will be used as evaluative criteria in the case study in Minamata-city.

Figure 2-5. Law System for Cyclical Society in Japan



Source: Adopted from Yoshida (2004)

CHAPTER III

POLICY-MAKING PROCESS IN MSW

From the previous literature review on waste management policies, I defined the goal of waste management policy as waste reduction (source reduction), and the strategy as a bottom-up approach through individual participation. Under these principles, I conducted an empirical study in Minamata-city, which I discuss in chapter 4. I used the policy sciences analytic framework of Harold Lasswell and colleagues (Lasswell and McDougal 1992, cited by Flores 2000) in my case study in Minamata-city, Japan. This framework helps us to understand municipal solid waste (MSW) problems in specific contexts, and to explore what factors lead cities to establish successful MSW management policies. This chapter shows why and how this framework is to be used in MSW policy problems. This chapter establishes fundamentals of the policy process analytic framework that serves in the case study analysis.

Policy Process Sciences Study

Applying Policy Process Analytic Framework

The term *policy* is defined as “a social process of authoritative decision making by which the members of a community clarify and secure their common interests” (Clark 2002:6). The systematic and inclusive policy process analysis framework prevents us from overlooking any elements of the policy process, to see problems without bias, and then to evaluate the problem objectively. On the other hand, policy sciences suggests that we seek to understand problems subjectively, too, so that we can understand more deeply about the people involved in the natural resources conservation policy process. This “stable framework of reference (Clark et al. 2000:8)”

served as a guideline to design the entire research with research questions; helped to understand MSW problems systematically during the literature review; and was used as an analytic tool for the Minamata-city case study.

The policy process framework consists of four dimensions: 1) problem orientation, 2) social process mapping, 3) decision process mapping, and 4) observational standpoint (Clark 2002). The following is the brief overview of the framework developed from *The Policy Process* by Tim W. Clark (2002) and *Foundations of Natural Resources Policy and Management* edited by Tim W. Clark et al. (2000):

Problem Orientation is the very heart of solving natural resources problems that have become more and more difficult to comprehend as society became complicated. Clark (2002) discussed the process of the problem orientation. To solve a problem pertaining to natural resources, we must completely understand the problem rather than jump rapidly into solutions. Unpacking the problem of municipal solid waste by evaluating the current situation, assessing the level of crisis, and factoring in historical trends (Trend Description) allows us to ascertain its root cause by answering questions about why and how they occurred (Condition Analysis), which further leads to the projection of future outcomes (Trend Projection). Going through those steps helps to set desirable goals (Goal Clarification) and appropriate solutions in MSW management problems, taking into account people's well-being and protection of natural resources (Solutions/ Alternatives).

Mapping Social Process helps to clarify problems and thus the goal. Social process seeks to picture all people involved in a particular context where a problem occurs. Because policy process in natural resource problems involves or is caused by *people*, social aspects should be emphasized. Conflicts among various participants with different perspectives are at the heart of problem solving since they impede clarifying an integrated, common goal of all participants.

Social process consists of seven elements – participants, perspectives, situations, base values, strategies, outcome, and effects. Three basic questions can help map social process: who

are they? (identification); what do they want? (demands and expectations); and how can they get what they want? (values and strategies). Since conflicts in decision-making can be related to many factors including the perspectives of participants (Clark and Brunner 1996, cited by Lieberknecht 2000), it is important to consider every participant's perspectives (demands and expectations). Therefore, by examining the identities, expectations, and demands of main participants, we can clarify the policy problem with the desirable goal.

Questions to be asked are: what they are looking for?; how do their perspectives vary which may have caused the problem through conflicts?; and how can their needs be met in harmony with the environment? Eight "values" (wealth, power, well-being, enlightenment, skill, respect, affection, and rectitude) help to understand participants' perspectives and situations (how participants' situations changed or would change as the outcome of a certain policy). For instance, some participants would lose *wealth* if their original access to a natural area is going to be inhibited for protection, but would gain *enlightenment* by developing understanding of ecological values. Economic development in a context would increase the *well-being* as access to health services is increased. Also, the "base values" which each participant already possesses can be used as strategies in policy processes. For example, the governmental bodies have (political) *power*; industries have *wealth*; and the academic professionals have *skill*, *respect*, and *enlightenment*.

The Decision Process is the central function of policy making process. Since the purpose of my research is to assess the policy process, evaluation of the decision process is going to be a focus of the case study in Minamata-city (Chapter IV). The decision process has seven functions – intelligence, promotion, prescription, invocation, application, termination, and appraisal (characteristics of each function are summarized in Table 3-1 below).

Finally, throughout the study, it is important to endeavor to keep the Observational Standpoint to avoid researchers' biases due to their social, cultural and academic backgrounds and to keep an objective view for rational analysis and conclusion.

Table 3-1. Decision-Making Functions, Activities, and Criteria

Function	Activities	Question to ask	Criteria
Intelligence	Gather and communicate relevant information Clarify goals	Is relevant information being collected from appropriate sources, and to whom is it communicated? Was the goal clarified?	dependable, comprehensive, selective, creative, available
Promotion	Discuss alternatives, recommending and mobilizing support for policy alternatives (e.g. open forums)	Which groups urge which courses of action? What values are promoted or dismissed by each alternative?; What groups are served by each alternative?	rational, integrative, comprehensive, effective
Prescription	Create rules, policies, and guidelines	Will the new prescriptions harmonize or conflict with existing rules?; What prescriptions are binding?	effective, rational, inclusive
Invocation	Put the prescription into practice	Is implementation consistent with prescription? Who should be held accountable to follow the rules? Who will enforce the rules?	timely, dependable, rational, nonprovocative
Application	Finally administrate the prescription	Will disputes be resolved by people with authority and control?; How do participants interact and affect one another as they resolve disputes?	open, inclusive, rational, uniform
Termination	Cancel existing prescriptions	Who should stop or change the rules? Who is served or harmed by ending a program?	timely, dependable, comprehensive, ameliorative
Appraisal	Evaluate the efforts in decision process (success or failure)	Who is served by the program and who is not? Is the program evaluated fully and regularly? Who is responsible and accountable for success or failure?; By whom are one's own activities appraised?	comprehensive, selective, independent, continuous

Source: Adapted from T.W. Clark, *The Policy Process: A Practical Guide for Natural Resources Professionals*, New Haven and London, Yale University Press. 2002; and T.W. Clark et al. *Foundations of Natural Resources Policy and Management*, New Haven and London, Yale University Press. 2000.

Important Factors in Policy Process

What elements do we need to establish for a successful policy-making process? In addition to the general understanding of the policy sciences framework above, I studied how the policy sciences analytic framework can be used in real cases of problem solving in natural resources in *Foundations of Natural Resources Policy and Management* (Clark et al. 2000). I further explored what elements are important in policy making processes. The case studies showed that each element and function of policy process analytic framework is inevitable for a successful policy making process. I determined important elements from the literature review of those case studies.

Common Interests

'Common interests' are "those that are widely shared within a community and demanded on behalf of the whole community (Clark 2002)," an opposing concept to 'special interests' which benefit a limited number of participants in the community at the expense of the rest of the community. Since "the policy process is the means by which people clarify and secure their common interests (Clark 2002)," it is important to always preliminarily focus on 'common interests' to accomplish a goal (alternatives) in natural resources policy and management. As Lassewell and McDougal (1992, cited by Garen 2000:229) suggested that "recommended policy alternatives should reflect common interest and should be rational, integrative, comprehensive, and effective", policies in MSW as one of the environmental problems should take account of common interest, ecological health, and people's mental satisfaction. The policy goal in MSW problems must be set in light of ecologically sustainable management.

Problem Orientation, Goal Clarification, Social Aspects

Some studies argue that different perspectives of various participants cause value conflicts and low communication levels hamper collaboration in the policy making process in

natural resources conservation (see Lawrence 2000; Wilshusen 2000; Kaczka 2000). Lawrence (2000), in the study of restoration of Beaver Pond Park, concluded that the failure of clarifying goals led to the failure of other decision functions such as *application*. Some community leaders who failed to develop a common understanding of the facts of the situation disavowed the goals fixed by researchers, skipping integrating the goal among participants and jumping to the evaluation of alternatives. This resulted in failure in the implementation phase which depends highly on the willingness of local participants. Additionally, Lieberknecht (2000) argued that the problem of the controversy over Barton Spring Salamander was not simply attributed to the failure of one federal law, but to a complex interactive social and decision process.

These studies showed the importance of goal clarification and problem orientation and understanding social aspects when solving natural resources problems.

This concept can also be applied to MSW problems. It is obvious that as consumers and as citizens, individuals are both directly and indirectly involved in and contribute to MSW problems in a material-oriented society with varying values, demands, and perspectives. If the cause of MSW problems is rooted in a specific context (in this case, consumers in advanced nations), it can not be understood nor can be solved without taking account of people in the society.

Decision Process: Public Participation

What factors are important in the decision-making process? 'Citizen Participation' is often emphasized as a factor in natural resources conservation programs for a successful policy process (e.g., Elwell 2000; Lieberknecht 2000; Flores 2000; Wilshusen 2000). What is citizen participation and why is it important in environmental conservation programs? What meaning does it have specifically for MSW management policies?

Many researchers who have conducted case studies suggest that absence of local participation hampered successful decision making processes. In a study of hydroelectric power

projects, Elwell (2000) indicated that exclusion of citizens from the decision process was a cause of policy problems.

In the Barton Spring Salamander case, Lieberknecht (2000) also found that the absence of citizen power in the decision process led to a policy problem. While there is broad recognition that 'citizen participation' is necessary in policy making processes, important questions arise. Who actually is to be involved? when? and at what level of participation? Alejandro Flores (2000) in his study of Protecting Human Health from Ozone Pollution stated that conventional analysis focused on 'official' or conspicuous actors. Even if leading organizations of policy process insist that there is citizen participation to avoid criticism of their monopolizing the decision process, it is doubtful if actual participation would influence the policy process and outcomes. Wilshusen (2000) emphasized the importance of 'local participation' in policy making process in Local Participation in Conservation and Development Projects, stating that "participation in decision making lies at the heart of democratic social processes." He discussed tendencies toward superficial local participation, questioning why local habitants do not usually participate in *application*, which is directly connected to previous functions such as *intelligence* and *promotion*. The weakness of superficial local participation is that a leading organizations share less decision-making power with local communities during formative phases (e.g., *intelligence*, *promotion*, and *prescription*) of a project, but higher amounts of power once a project is established (*application*). The usual situation is that when officials make prescriptions and enforce them without either giving information or reflecting any opinion of citizens, local people often feel alienated from the decision making process.

As those studies showed, one reason why citizen participation has been important in natural resource conservation programs is that local people are the ones who are generally excluded from decision processes even though they are the major stakeholders in the policy process. It is local people who would be mostly affected by the results of policy processes. Environmental conservation needs a long-term effort – temporary ad hoc prescriptions result only

in short-term success. To accomplish long-term goals with long-term involvement of local citizens, they need to be involved in the early stages of the process. Being involved from the beginning, local people have a sense of responsibility for the issues questioned, and know it is for their own well-being, not for others. This 'sense of ownership' versus 'somebody else's problem' is one of the most important elements in any context in any kind of environmental conservation problems. Especially for MSW management policies, citizen involvement is important because MSW issues deeply affect citizens' daily lives. Thus, decisions made affect citizens' lives, requiring their behavior to change to comply with the policy. It is also necessary because citizens are the major contributors to MSW generation, the root cause of the problem to be resolved. Therefore, without citizens' cooperation, the implementation of MSW policies can not be accomplished.

While there is recognition of its importance, what is citizen participation? What form should it take to make a policy successfully established? First of all, the definition of 'public participation' was introduced by Becker (1993) in her study of the Great Lakes Basin ecosystem management: "[T]he means by which the views of all parties interested in a given issue are integrated into the decisionmaking process." Second, there is some level of citizen participation. According to "Levels of Local Participation" of UNRISD (cited by Wilshusen 2000:300), local participation in decision processes can be categorized into seven levels, from Level 1: passive reception of information to Level 7: self-mobilization. To affect citizen participation in a policy process in which perspectives of citizens influence the decisions made, at what level do citizens have to be involved in the decision process? Wilshusen (2000) found that the higher the level of local participation, the higher the credibility (success) of a program, reducing conflict and increasing durability of project result. Becker (1993) also insisted that public participation should involve "two-way communication" between the decision-maker and the public, while it varies in level from 'one-way transfer of information' to 'citizens engagement in initiatives in planning'. Wilshusen (2000) discussed that it is possible to raise the level of participation as a project

proceeds, which process, however, depends highly on a leading organization's efforts.

What allows citizen participation to be accomplished successfully? Wilshusen (2000) attributed the failure of actual local participation to power possession by leading organizations, such as official groups or outside experts with technical knowledge. Their reluctance to share power made local people distrust them and promoted less cooperation because, "local communities often do not buy into project goals, not accept strategies, not feel that they possess any power to influence project outcomes (Wilshusen 2000:290)". It is understandable that local people are very reluctant to participate in a mandatory *application* of the prescription. In terms of values, local people are likely to be deprived of *rectitude* and *respect*. Thus, power sharing should be done early in project development in order to build trust. If leading groups take account of local people's perspectives and allow them to participate from the very beginning of the decision-process, participation in the latter decision process (such as application) would go more fluidly and with less resistance. Then people know the reason why they need to cooperate in *application* and become responsible for the entire problem. Wilshusen's study showed that projects with the highest power sharing accomplished the highest level of participation. In this sense, psychological factors should not be ignored in decision making processes, as well as economic, biological impacts in the area. Wilshusen (2000) suggested 'operationalizing participation' as an element of successful participation. This has two different approaches – participation as a primary objective and participation as a means for protecting biodiversity. The former is more likely to result in successful participation because it needs substantial forethought as to how participation can occur while the latter does not consider specific involvement strategies.

In a policy process framework, the *promotion* function is one of the important elements in the decision process, in which the perspectives of all the participants are clarified and alternative solutions are widely discussed through open forum (Clark 2002). In a study of ecotourism and biodiversity protection, Garen (2000) agreed with the importance of this function in that program

developers should have a comprehensive understanding of all participant perspectives. The key element in this function can be found in the words of Wells (1994, cited by Wilshusen 2000:273): “[B]ut the early initiatives were worked out in face-to-face contact with people who would have to live with the results of any changes.” This indicates that it is important for a decision maker to have a face-to-face discussion with stakeholders, especially those who are going to implement the policy.

Wilshusen (2000) concluded that while citizen participation takes a long time, but it is the only way that leads organizations to increase their own legitimacy and the legitimacy of their projects in the eyes of local people. As a result, a community will adapt conservation and development intervention in their own interests over the long-term. Therefore, although it appeared that many environmental conservation programs disregarded the needs of local people, the community should have a primary emphasis for the fundamental solution.

In summary, there are several key factors that affect the successful decision making process. First, failing to set clear goals is a factor in policy process failure. In setting goals, primary focus should be put on protecting common interests in any problem solving in natural resources. It should be understood that different perspectives of various participants tend to cause value conflicts and lower communications, which then hamper collaboration in the entire policy process. Therefore, all participants’ perspectives should be taken into account, especially those of local people, who conventionally tend to be excluded in earlier phases of the decision making process while they are definitely required to participate in later phases of decision processes and to change their behavior to comply with the policy. Distrust by local people of the leading organizations due to their exclusion from the decision making process is the main reason for low levels of participation. The cure for this is power sharing by leading organizations at an early stage in the decision making process. Having local people have a ‘sense of ownership’ instead of feeling it’s ‘someone else’s problem’ does help a smooth policy process. It nurtures their responsibility to the problem and eventually encourages their willingness to cooperate.

Face-to-face contact between the decision makers and the major actors of implementation (such as local people) in the *promotion* phase is important.

Communities' MSW Management Policies: Recycling Programs

In this section I will review some recycling programs. Recycling is one of the community strategies for solving municipal solid waste problems within a policy process analytic framework. While recycling does not necessarily mean waste reduction, it is selected because it is recognized as one of the success stories among MSW management options – higher participation in recycling programs leads to higher diversion of MSW going to waste stream (Folz 1999), and thus a lot of studies have been done to assess recycling programs and their success. As a recycling program requires a high level of local participation, especially in *application* functions, it is a good example for the study of community involvement. Through the literature review on this issue, I learned what factors led to the success of citizen participation in recycling programs, and I analyzed the recycling efforts in terms of the decision-making process of the policy process analytic framework. If there are any successful recycling programs, I wondered if they met the requirement of policy making process. Did they have appropriate goals with clarifying problems? What is the appropriate goal for recycling program in terms of ecological perspectives and in long-run? (e.g., raising recycling rate in number; total waste reduction, etc.) Do they include any social aspects which focus on local participants? Do they meet the criteria in each decision making function? What other factors except for these general elements of the policy making process led to successful policy goals in recycling programs? Is it applicable to only municipal solid waste problems, or can it be generalized to any other problems in natural resources?

David Folz (1991a; 1991b; 1999) studied recycling efforts in communities. Since recycling programs depend highly on citizens' willingness because there is no direct and short-term benefit to them, his focus was on "how to maximize and sustain citizen participation" in recycling programs (Folz 1991b). He determined the factors of successful recycling efforts of

communities to be: 1) recycling policies adopted (mandatory versus voluntary); 2) the way a decision process is conducted; and 3) local officials' efforts and status of program coordinators.

Mandatory programs were found more effective than voluntary ones. In mandatory programs, sanction or penalties for improper separation appeared effective (although in 1999 study, they showed a negative effect on participation). Among voluntary programs, instituting "block leaders" and enhancing "convenience," such as curbside pickup, free bins, and composting programs, are key factors. Also clear, challenging, and near-term goals for recycling work better than a later, ambiguous goal. Folz noticed that near-term goals may constitute a more salient appeal to citizen altruism. Folz also mentioned a feature of the decision making process that included public involvement in policy design (*prescription*) and implementation (*application*) as an important factor. To enhance public participation, a decentralized, consultative process relating to the formation and implementation of strategies is inevitable. An open democratic process in deciding how and what to recycle is important for recycling policies. Therefore, involving citizens and community groups in the planning and design of a recycling program is primarily important. Democratizing the design decision process taps citizen interest in recycling, enhances the program's credibility, and increases the prospects for a personal commitment to a sustained change in waste disposal behavior. As in other factors, he focused on local officials' efforts and commitments, especially with a full-time manager or coordinator for recycling programs.

In another study on 17 communities' recycling projects (Platt. et al. 1991), similar factors in the success of high recycling rates were found, such as mandatory participation, targeting a wide range of material for recovery, convenience with weekly curbside pick-up, composting programs; provision of containers for recycling; and economic incentives. Platt et al. (1991) discovered in one community's recycling activities that 80% of communities studied with the highest rate of material recovery (30% to 57%) had populations under 30,000; communities with higher recovery rates with populations over 100,000 were few. One of the reasons for this is that it is easier to get involved in a smaller city because the decision makers and people are closer to

one another. However, as Platt et al. suggested, it is possible to apply those factors to a larger scale because large metropolitan areas may consist of smaller communities. Folz (1991a; 1991b; 1999) also found that the population feature had less influence on the outcome of a community's recycling efforts. Combining the two studies, while the smaller scale operation is more successful and has potential to conduct recycling programs with active community participation, the concept can be applied to the larger communities.

There is also a successful report of waste reduction policies by a city in the U.S. The city of Dover, New Hampshire, accomplished a high rate of recycling and waste reduction through a recycling program with 22 recyclables and the Pay-As-You-Throw (PAYT) program started in 1991 (Environment 1998; EPA 2006b). It also has a drop-off site for brush and other yard waste. The reduction rate of the city's residential waste raised from 3 % to 52% in six years, and only 5% of the items were sent into landfill (Environment 1998); 11,000 tons of annual residential waste went down to 3,900 tons, and the recycling rate is now 50% (EPA 2006b). The program became the citizens' pride, in that they accomplished a big challenge and that they are contributing to the environmental conservation (EPA 2006b). Dover's waste reduction program meets the conditions the two studies above showed such as 1) challenging goals; 2) economic incentives; 3) convenience; and 4) inspiring altruism of local participants. As Anderson (1998) also showed in the study of Denmark's national policies, multiple methods may have contributed to the success.

In summary, several key factors in communities' waste reduction program are determined:

- Mandatory programs rather than voluntary ones
- Challenging (wide range of material recovery) and near-term goals
- Incentives: altruism, economic incentives
- Convenience (weekly curbside pick-up, composting programs, and providing recycling containers)

- Multiple measures
- Local official efforts with full-time status
- Citizen involvement for program design
- Placing local leaders in the program

Although Folz (1991a; 1991b; 1999) suggested the importance of the decision making process with citizen involvement in both *prescription* and *application* for a successful recycling program, how it would happen is not assessed yet. The empirical study in Minamata-city should provide more information in detail. Those factors could be applied to any natural resources problems. I explore these factors in depth in the case study in the next chapter.

CHAPTER IV

CASE STUDY IN MINAMATA-CITY, JAPAN

In this chapter, I present a case study analysis of municipal solid waste (MSW) policies in Minamata-city, Japan. I focus on two policies to reduce MSW: 1) a Recycling Program with 19 Source Separations²²; and 2) Food-container Abolition Project of Women's Committee on Waste Reduction. The reason that the two policies were selected was that they were the big turning points in the waste management of Minamata-city. They were unique and creative in that they involved high citizen participation even among women in their development in a still male-centered, bureaucratic society where local governments and citizen groups are weak.

In spite of such conventional social and political frameworks in Japan, what factors allowed Minamata-city to accomplish these successful environmental policies? What can be learned from studying the unconventional policy processes in the Minamata-city case study that will help us to identify new approaches to environmental problems in Japan?

The objective of the case study is to determine what factors led to success of the two MSW management policy processes of Minamata-city and to explore whether the factors can be generalized. To fulfill the objective, I conducted the study based on case study questions (see Appendix C: Research Questions).

This chapter provides both a descriptive and an analytic study. I first draw a contextual map of the city in terms of MSW problems, including its history, geography, and social

²² Contents of 19 Categories Source Separation Program: recyclables of 6 types with 15 sorts – 1) regular glass-bottles (e.g., beer bottles and Japanese liquor); 2) miscellaneous glass-bottles (6 sorts); 3) cans (2 sorts); 4) metals (2 sorts); 5) papers (3 sorts); 6) clothes, the landfill waste (2 sorts), the hazardous waste, and the bulky waste (Minamata-city (a)). The combustible waste is separately collected, while the 19 waste categories collected at the same time (once a month). As the city officials emphasized 19 when they talk about their recycling program, I followed their way to name the policy. To present, it ended up with 22 waste categories including the combustible waste.

characteristics, to understand participants' perspectives. Second, I describe the two focused MSW policies and the specific MSW problems that triggered those policies. Third, I map the decision making process with seven functions for each policy (see Chapter III). Fourth, I report the findings obtained through the descriptive study, answering the case study research questions. Finally, based on the findings, I determine the factors that led to the success of two MSW policies in Minamata-city.

To draw the contextual map of the city and the decision process of the two focused policies, I depended on interviews with eight people (see Table 1-1 for the interviewees' roles).

Contextual Map of Minamata-city, Japan

Waste Management Policies in Minamata-city under the National Scheme

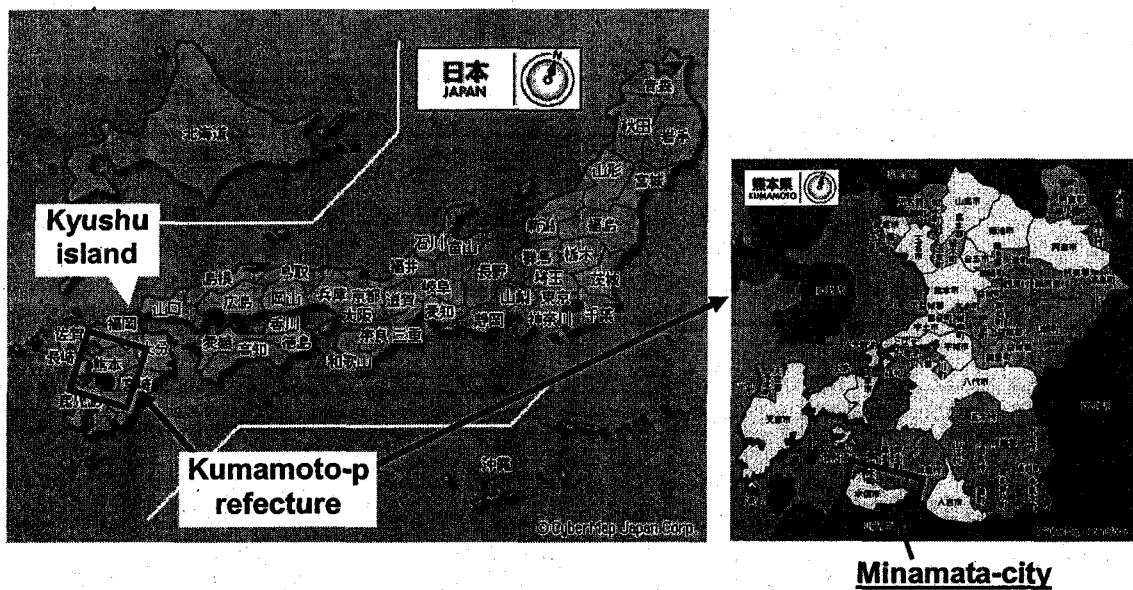
Minamata-city is a small city with an area of 162.87 km² and a population of 30,000 with 12,000 households (as of 2006 at <http://www.minamatacity.jp/>), located at the southernmost tip of Kumamoto-prefecture, Kyushu, Japan (Figure 4-1). Eighty percent of the land is mountain and forest; there is a little flatland. Facing the Shiranui-kai-sea, it flourishes in fishery, agriculture and sightseeing with hot springs. The city has also been well-known for Minamata-disease (methyl-mercury pollution). Learning from the experience of environmental pollution, the city is now regenerating based on environmental protection under the Model Environment-friendly City Creation (hereinafter, Model Environment-friendly City) Project²³. The waste problem has been given top priority in the project.

Along with the national trend with changing consumption patterns based on a developed economic systems of mass-production, mass-consumption, and mass-disposal system ('one-way'

²³ The project includes five top priority programs to accomplish the 'cyclical-based society': four environmental issues – 1) waste (resource recovery); 2) protection of rivers and seas; 3) establishment the city full of green and flowers; 4) environmental education, and 5) establishment of community friendly to people and nature (Minamata-city 1992).

society) after World War II (Chapter II), Minamata-city also faced increasing waste amounts and related problems. Both total and per capita waste amounts increased from 1960 up to a peak in 1990 (Figure 2-2). In addition, under the national waste management system in which municipal bodies are responsible for MSW management (see Chapter II), MSW problems became more urgent and serious due to financial pressures. Under this situation, the city has made consecutive efforts for waste reduction, accomplishing a lower amount of MSW generation (0.85kg per capita/day) (Table 4-1) and a higher recycling rate (approximately 40%) (Table 4-2 (b)), compared to the national average.

Figure 4-1. Location of Minamata-city, Japan



Source: <http://www.mapion.co.jp/html/map/web/japan.html>

Table 4-1. Minamata-city 2004 Waste Status

Waste Type	Annual (t)	Annual average		
		Day (t)	per house (kg)	per capita (kg)
Combustible	5,103	16.0	413	171
Organic	1,574	4.9	127	53
Bulk/Non-combustible	491	1.2	40	16
Resources	2,110	6.8	171	71
Total Waste	9,278	29.8	751	312 (0.85kg/day)

Source: Minamata-city 2004

Table 4-2. Minamata-city Waste Transition (1982-2004)

Table 4-2 (a)

Year	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Generation	8,313	8,572	8,909	9,238	10,038	10,706	11,202	11,816	11,945	11,283

Source: Waste Management Task Force Final Report

Table 4-2 (b)

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
Combustible	7,700	7,964	7,462	6,856	7,061	7,281	7,616	7,935	8,660	8,029	8,190	7,120	5,231	5,103	
Food Waste	0	0	0	0	0	0	0	0	0	0	0	544	1,527	1,574	
Bulk/Non-combustible	3,226	2,044	958	521	578	684	741	832	843	585	361	261	282	356	
Resources	0	0	854	1,461	1,513	1,583	1,571	1,735	1,869	2,150	2,197	2,298	2,371	2,245	
Total Generation	10,926	10,008	9,274	8,838	9,152	9,548	9,928	10,502	11,372	10,764	10,748	10,223	9,411	9,278	
Recycling rate	0.0%	0.0%	9.2%	16.5%	16.5%	16.6%	15.8%	16.5%	16.4%	20.0%	20.4%	27.8%	41.4%	41.2%	
Landfill	Incinerated residue	1,596	1,432	1,262	969	1,046	1,083	1,190	1,185	1,298	1,266	1,666	1,236	350	415
	Other residue	2,417	1,297	530	320	273	294	273	399	907	414	339	324	507	594
	Total Landfilling	4,013	2,729	1,792	1,289	1,319	1,377	1,463	1,584	2,205	1,680	2,005	1,560	857	1,009
Population	34,510	34,149	33,842	33,671	33,188	32,905	32,539	31,991	31,785	31,506	31,165	30,545	30,257	29,784	
Household	12,333	12,274	12,307	12,348	12,384	12,393	12,390	12,351	12,445	12,548	12,559	12,382	12,376	12,355	
Per capita (kg)	317	293	274	262	276	290	305	328	358	342	345	335	311	312	
Per household (kg)	886	815	754	716	739	770	801	850	914	858	856	826	760	751	

Source: Minamata-city Clean Center "2004 Minamata-city Waste Disposal Status"

Social Trends in Minamata-city: Minamata-disease History to the Model Environment

-friendly City

Since environmental planning and activities in Minamata-city are rooted in the tragic history of Minamata-disease as basis, it is important to understand how the disease influenced the society and citizens both economically and psychologically.

Minamata-disease, a methyl-mercury pollution induced disease, was officially discovered in Minamata-city in Kumamoto (prefecture), Japan in 1956 (Minamata-disease Museum 2005). It was caused by waste water poisoned with methyl-mercury discharged by a major company in the city, Nihon Chisso Hiryo Co., Ltd.²⁴ (currently Chisso Co., Ltd.; hereinafter, Chisso) into the nearby sea. Local residents, especially those who lived around the seacoast area, as well as fishermen, contracted the disease by eating fish caught in the sea. The methyl-mercury was a byproduct of the process of manufacturing acetaldehyde. Chisso built a factory in Minamata-city in 1908 originally for manufacturing chemical fertilizer. It became a major chemical factory and started producing acetaldehyde in 1932, an important in-process material for the organic chemical industries such as fiber and vinyl. This was a growing industry during the rapid economic development after the World War II, and thus, Chisso was a star company nationwide at that time, almost monopolizing the market. As in Japanese economy, Chisso played an important role in Minamata-city – the factory paid 60% of the city tax, and 60-70% of Minamata's citizens were employed by the company; people were desirous and proud of working for Chisso. Chisso Factory, therefore, was, so to speak, the lord of the city. Chisso “swims together and sinks together with the city (Yoshii 2002; Yoshii and Joko 2004)”, and that was the largest reason delaying a solution of the disease by determining the cause as the polluted waste water discharged by Chisso 12 years after the discovery.

Methyl-mercury poisoning causes neurological disorders. Minamata-disease patients suffered from paralysis, blindness, arms, hands, and legs twisted in an unusual way, and many

²⁴ The name indicates “nitrogen fertilizer manufacturing”.

died²⁵. They also suffered mentally from discrimination, in part because of a misunderstanding of the disease²⁶. People related to the disease lost jobs and marriages. The compensation money they finally obtained caused envy from others while what patients and families really wished for was their original healthy bodies and normal lives. Not only patients but also other citizens suffered. Chisso, the major industry, became immersed in financial crisis due to the large compensation paid to the patients. The rumor of the disease ruined other major industries. The fishing industry went down, and agricultural products labeled 'produce of Minamata' could not be sold in the market. The tourism industry, once-flourishing with hot springs, also went out of business.

What was the most calamitous was the devastation of inner society – it destroyed the heart of people and communication among them. Because Chisso was at risk of bankruptcy due to the amount of compensation to the patients, the citizens attributed the city's catastrophe to the patients who made claims against the company. Society was completely split in two: patients (and support groups) versus citizens. Next-door neighbors or even siblings and relatives broke up if they were on a opposing side of the Minamata-disease issue. Even patients' support groups had conflicts with each other because of ideological differences.

In this way, the economy collapsed, the community was destroyed in the conflict, and people's hearts were broken, not to speak of the agony of patients. The whole society, both internal and external, of Minamata-city was devastated. That dark age lasted for almost 40 years after its official discovery in 1956 until the 'political solution'²⁷ in 1995. The 1980s was the era when if people mentioned the term of Minamata-disease, the atmosphere would be frozen (Women's Committee 1, personal communication. 12/25/2005).

However, the Minamata-disease problem drastically moved toward resolution from the

²⁵ Number of patients was 2,265 (Minamata Museum 2005).

²⁶ In the beginning Minamata-disease was misunderstood as a transmittable disease or an odd disease particular to the region.

²⁷ The patients' groups sued the national government. It was politically negotiated and settled down as a form of 'reconciliation' between the nation and the patients in 1995.

late 1980s, when the reclamation of toxic sludge in the Minamata-bay which was the symbol of Minamata-disease completed. The Kumamoto-prefecture government embarked on political solutions of Minamata-disease and rejuvenation of the city by starting “the Minamata Environmental Creation Development Project” in cooperation with the city government. Dialogue between the governments (city, prefecture) and the Minamata-disease patients with their support groups started through the project. The International Conference on Industry, Environment, and Health was held in Minamata-city in 1991. The city joined the Earth Summit as a panelist in 1992. In 1992, the city council made “the Declaration on the City Development with valuing the Environment, Health, and Welfare,” followed by the “Declaration on the Establishment of a Model Environment-friendly City” in a prefectural festival, the Environmental Creation Minamata '92 Forum. Under such movements, signs of hope emerged among citizens. People wanted to solve the Minamata-disease case and regenerate the city.

Several major events continued throughout the 1990s in cooperation between the government and the citizens. One of the sensational events which contributed to changing the Minamata-city's tragic history was the Official Apology to the Minamata-disease patients presented by the city mayor, Mr. Masazumi Yoshii (as representative of the city government) at the Minamata Disease Victims' Memorial Service organized by patient groups. The city government apologized for not having taken adequate measures that may have prevented further tragedies of the disease (Yoshii and Joko. 2004). The apology received great response through the city and nationwide. All the patient groups (except one) who had boycotted the previous two joined the service, indicating the acceptance of the apology (Yoshii and Joko. 2004; ex-mayor, personal communication. 12/25/2006). The former mayor recalled that it was the beginning of the psychological resolution in Minamata-society (ex-mayor, personal communication. 12/25/2005). Following these efforts by the city government, by 1994, people could talk for the first time about

Minamata-disease in public. With a symbolic term “Moyainaoshi²⁸” used in referring to “reconstruction of inner society,” the city moved toward regeneration in cooperation between the government and citizens. In the same year, a citizens’ council named “Minamata 21 Plan Citizen Conference” was established by the government to create an integrated plan for the city. The council proposed that the city government “accept inconvenience” as a guiding principle in 1995, which became the basis of the *Minamata-city Integrated Plan* and *Minamata-city Environmental Basic Plan* of 1996. Such cooperation between citizens, patients, and the government finally led to the political solution of Minamata-disease. Following this, the city set off on the new path as the Environment-friendly city.

The beginning to the middle 1990s, when the two focused policies in MSW management were established, the city started to get over the long-lived darkness of the Minamata-disease and turn its direction toward the environment-friendly city. That fostered a trend of psychological solution in people’s minds. Through consecutive efforts for the resolution of the Minamata-disease case and rejuvenation of the society supported by the governments, the cooperative relationship among citizens was established, as well as between city government and citizens. In addition to the keyword “Moyainaoshi,” common principles when Minamata-citizens got together for any activities were established, such as “Kyodo” mind, which implies “working together in collaboration and cooperation.”

²⁸ A movement to try to re-unionize the community and regain the bond of affection people that have long been lost in the conflict due to the Minamata-disease case. The original meaning of “moyai-naoshi” is ‘retying the painter’ – “moyai” is ‘a painter (tying boats)’, and “naoshi” means ‘re-do’: once untie the complicatedly entangled painter of inner society and then retie it tidily. Officially introduced by the former mayor, Mr. Yoshii in the Official Apology to the Minamata-disease patients, it became used among the citizens (Yoshii and Joko 2004:55, 172-176).

Social Process Mapping

I provide perspectives of major participants' groups as the summary of social background of the two focused policies in Table 4-3 below:

Table 4-3: Social Process Mapping

<p>Citizens</p>	<ul style="list-style-type: none"> - always had concern on Minamata-disease case deep in mind - had a desire to get out of the darkness caused by Minamata-disease case and rejuvenate society - had lost their confidence through long lived discrimination outside of the city; and wanted to remove the negative image of Minamata-city - recognized the importance of the healthy environment (high environmental consciousness) - (some) thought they should rebuild the city based on the environmental protection - (many) wanted to contribute the environmental protection as a city who experienced the environmental pollution - had long-lived distrust against the city government in the city administration
<p>City Government</p>	<p>had a goal to:</p> <ul style="list-style-type: none"> - resolve the Minamata-disease case as soon as possible - rejuvenate society from the Minamata-disease case by: changing the negative image of the city to the positive one; regaining the communication between people; and regaining the long-lost confidence of citizens - regain the trust of the government from citizens - focused on environmental conservation (learning from Minamata-disease experience) and citizen participation in new city policies
<p>Minamata-disease Patients</p>	<p>Had a desire to:</p> <ul style="list-style-type: none"> - be politically cured while they are alive - have peace of mind and normal life with by recovering a good relationship with neighbors instead of conflicts - deep distrust against government in terms of the treatment of Minamata-disease problem
<p>Patients' Support Groups</p>	<p>Had a goal to:</p> <ul style="list-style-type: none"> - cure the patients in politically also mentally due to harsh discrimination and jealousy with compensation - let ordinary citizens understand the patients' situation - thus, seek the way to begin communication between patients and citizens - deep distrust against government in terms of the treatment of Minamata-disease problem

Two Focused MSW Management Policies in Minamata-city

Table 4-4: Policy Process Brief Chronology

Recycling Program (1992-1994)	
1992 (Jun)	Waste Management Task Force (abbr. Task Force) was established
1992 (Nov)	Task Force completed the Final Report (then, dissolved)
1993 (Feb)	Explanatory meeting of the recycling program started
1993 (Mar.)	Recycling Program started to be introduced into the model districts Waste Symposium was held in Minamata-city
1993 (Aug.)	Recycling Program was started in the whole city
1993 (Sep) -1994(Mar)	City officials visited the Recycling Stations everyday to instruct the material separation
Food-containers Abolition Project (1997-2000)	
1995	Waste amount started increasing
1997 (Dec)	Women's Committee on Waste Reduction was established
1998 (Jan - Aug)	- Committee meetings and study tours - Site survey at the four supermarkets - Discussion meetings with the supermarkets
1998 (Sep)	"Food-containers Abolition Agreement" (1st) was completed
1998 (Dec)	Site survey of food-containers usage at the supermarkets
1999 (Jan) - 2000 (Oct)	Committee meetings on food-containers
1999 (Sep)	The city reported that waste amount was reduced
2000 (Oct)	"The 2 nd Food-containers Abolition Agreement" was completed

Policy Process Overview: Background, Process, Outcomes and Effects

Recycling Program. In 1993, the city plunged into a Recycling Program with 19 Source Separations (hereinafter, Recycling Program) from the previous 3 types of separations with combustible, non-combustible, and bulky waste (collected occasionally) conducted in most communities at that time in Japan. This program was a big turning point in the city's waste management and toward the Model Environment-friendly City the city was promoting.

Waste generation in the city began increasing in late 1960s, and the problem of waste

amount surfaced by late 1980s (Women's Committee 1, personal communication. 12/25/2005). Table 4-2 (a) (also Figure 4-2 (a)) shows the waste generation increase at 44% between 1982 and 1990. Although there were some efforts for waste reduction at both the government – through city reports – and citizen level in late 1980s through the early 1990s, little effect had been seen.

In 1990, the city started 3 types of waste material separation (combustible, non-combustible, and bulk waste). At the same time, a new waste disposal facility was established with a catch phrase of “able to break up everything, able to burn everything” (recycling program coordinator, personal communication. 12/26/2005). The waste management system of the time was based on “burning the flammables, and dumping the rest (Minamata-city 1992)”. As a consequence, two consecutive explosions occurred at the waste disposal facility in 1992. The explosions were caused by small propane gas cans mixed into non-combustible waste compressed in a refuse crusher. They were big enough to blow the roof off the incinerator and resulted in stoppage of the collection of non-combustible and bulk waste for a month and high expenses for the repair (Women's Committee 1, personal communication. 12/25/2005). The incident raised a controversy among the city government, the city councilors, and even citizens, questioning the present waste disposal system and citizens' morality on waste disposal.

The city government needed to take drastic action in the MSW management in terms of waste reduction and its improper treatment. While the explosion was a matter of emergency, the financial crisis was already expected in the future due to limited dumping space if the city did not divert materials the waste stream. The only disposal site in the city was estimated to become full within approximately five years (Minamata-city 1992:9). The city government immediately established the Waste Management Task Force (hereinafter, Task Force) in 1992. Seven members were chosen among the young adults (30-40 years old) from a variety of sections of the city government such as City Planning Section and General Affairs Section, aiming at creativity and energy for the expected long-lived project. The objective of the Task Force was to investigate the problems pertaining to the current waste management and to suggest the alternatives, which were

provided in the Waste Management Task Force Final Report (hereinafter, Final Report). The Task Force proposed the Recycling Program as the alternative solution (which eventually attained 19 source separations). Although recycling programs were being widely introduced at that time in Japan (usually 2-3 source separations), 19 source separations was a sensational suggestion.

While the direct objective of the policy was the solution of waste problems, the Minamata-disease problem was a central matter of concern for the city government and the citizens. As noted above, the early 1990s was when the Minamata-disease problem moved toward the resolution. The citizens wanted to contribute to the regeneration of the city as well as to environmental protection. The explosion incident shocked citizens, not only because of the incident itself but also because it showed Minamata-city had not learned from the previous experience of environmental pollution. The Task Force stated in its Final Report, "since many environmental plans and slogans created (in the city) have always ended up empty and have not reached to the real action throughout citizen, it is a good opportunity that the citizens get involved in the environmental protection through helping solve the waste problem they directly generate and can not avoid (Minamata-city 1992)."

Encouraged by such social trends, the program was quickly adopted and took root in the city within one year after the program started, despite its novelty. There were many outcomes and effects pertaining to the policy. First of all, it showed a waste reduction effect, especially on the landfill waste: in 1993 landfill waste was reduced by 40% compared to the previous year, and the expected lifetime of the dumping site was expanded to more than 10 years (Nishinohon Shinbun 12.16.1994); Figure 4-3 showed a drastic reduction of the landfill waste between 1991 and 1994. Also 7.3% reduction of total waste generation was accomplished after a year (Minamata-city n.d.a). In 1995, the city had achieved the top level in waste separation in the country.

There were also secondary favorable effects pertaining to program such as revitalization of local communities through communication among residents. First of all, one of the most pleasant outcomes was the recovery of communication among people – neighbors, who had not

communicated if they were on different sides of the Minamata-disease issue, were now obliged to talk through working together for the material separation. In this way, broken relationships in the community were mended through monthly gatherings at the recycling site. Currently, besides the Minamata-disease issue, the citizens also appreciate the effect of the program on the communication: new comers can easily assimilate into the community and younger people help seniors to bring heavy materials.

Another great outcome was that the citizens regained their long-lost confidence as human beings and as Minamata-citizens who had been ashamed of the city with its dark image. As the mass media reported the city's recycling efforts again and again, Minamata-citizens realized they were applauded and respected outside the city. It was the first time Minamata-citizens had regained confidence (Women's Committee 1, personal communication. 12/25/2005).

Financial benefits gained through program were also important towards encouraging citizens to further recycling and development of the city. Because the city became well-known through media reports for the success, many tours by school groups and government officials came to the city. Profits gained by selling the recycled materials were direct incentives for residents in each region. The collected waste materials in Minamata-city were qualified as "brand garbage" due to cleanliness and proper separation, and sold for high prices – 2.5 million yen (US\$ 20,000). Selling recycled materials was turned into profit for the community. It also invited recycling business into the city, which increased employment.

In addition, the entire city became cleaner than ever (ex-mayor, personal communication. 12/25/2006). Environmental consciousness developed among people. There were some changes in citizens' lifestyle. Some people (e.g., housewives) began considering buying products that created less waste; housewives began buying beer in glass bottles instead of in aluminum cans. It was mostly women (housewives) who brought waste materials to the material collection stations at the beginning, however, many males (husbands and sons) began participating recently. Now all people, from children to seniors, participate. It also contributed to human resources development.

The former mayor recalled that regional citizen leaders were developed through the Recycling Committee system (see Appendix E) in each region of the city (ex-mayor, personal communication. 12/25/2006). It was also a good opportunity for environmental education of children through recycling.

There was also a change of perspective on waste, because waste is no longer viewed as dirty and nasty things: citizens are now proud of their recycling activity; and the workers who are in charge of collection and disposal at cleaning centers gained confidence and respect for their work (recycling program coordinator, personal communication. 12/26/2005). Therefore, this Recycling Program was a big turning point not only in waste management in the city, but also in terms of changing Minamata-city society.

Furthermore, the changes had long-term effects. The success of the original Recycling Program with 19 source separations encouraged further material separation (up to 22 types of waste material separation by 2005)²⁹. Because the fundamentals of the recycling system were already firmly established, those additional material separations were accepted relatively smoothly. Although the addition of 'organic waste' raised a controversy and the city government had a hard time passing policy with a lot of complaint from citizens and even among city councilors, the success of the previous program helped this change to be accepted. As plastic-relevant waste had reduced the combustible waste, citizens appreciated the result (vice chief, Environmental Planning Office, personal communication. 12/27/2005). This proved to be one of the most important material separations in waste reduction. 'Organic waste' is the only category that was *actually* reduced, which was a secondary consequence of the original intention of raising recycling rates (city official, Environmental Clean Center, personal communication. 08/02/2005; vice chief, Environmental Planning Office, personal communication. 12/27/2005).

²⁹ Plastic bottles were added in 1997; 'plastic-relevant waste' in 2000, and 'organic waste (food waste)' in 2002.

Food-containers Abolition Project. Although the Recycling Program was on the right track by 1994, the amount of the waste generation began increasing again in 1995: the total waste generation that had declined down to 8,000 tons returned to almost the same level as before the Recycling Program, 10,000 tons, and so did the combustible waste (Ori 2002; also Figure 4-2 (b) and Figure 4-4). This was, in part, because of the dioxin problem in Japan³⁰ – the city decided to collect the waste that was being burned at home, small offices, and schools individually. The present dumping space was in crisis, and was estimated to be filled to capacity in a few years (former-mayor, personal communication. 12/25/2005). The city government again called for the waste reduction through city reports. Realizing the fact that the recycling program did not help *reduce* waste generation (it had reduced landfill waste, but had had little effect on combustible waste), the government decided to take measures to actually reduce MSW generation at the source. In addition, despite the strict recycling program, the recycling rate remained low at 16% in 1997 (vice chief, Environmental Planning Office, personal communication. 12/27/2005; Table 4-2 (b)). With the unique idea of ‘collecting housewives to reduce the waste getting into home’ which came from the assistant manager (later, Section Head) of Environmental Measurement Section (hereinafter, Environment Section), the Women’s Committee on Waste Reduction (hereinafter, Women’s Committee) was established which consisted of female representatives from 16 groups as direct members³¹. The media reported that “3,500 women formed a scrum for waste reduction (Nishinippon Shinbun 01/14/1998) – if correcting all women members of all the groups, it counted 3,500 members.” One of the most remarkable accomplishments of the Women’s Committee was the abolition of food-containers at four supermarkets in the city.

³⁰ As the municipal solid waste incineration facilities (most of which were owned by municipalities) was found as the major source of the dioxin emission in 1997, the national government set “the New Guideline (Dioxins Emission Prevention Guideline)” as a countermeasure, which set the target of the dioxin emission reduction from the facilities as well as encouraged municipalities to reform their small incinerators to the larger ones (Yoshida 2004:73).

³¹ The city government called for all 16 women’s groups or citizen groups that women actively joined in the city.

Styrofoam food-containers at supermarkets as well as plastic grocery bags were the primary foci of the committee. At that time in Japan, with an over-emphasis on sanitation, cleanliness, and attractiveness, most food sold in supermarkets including fresh food including vegetables and fruits, were packed in styrofoam food-containers. Women's Committee conducted on-site investigations and had several meetings with the four supermarkets under the intermediation of the city government. As a result, the four supermarkets signed the "Food-containers Abolition Agreement" for 64 food items in 1998.

Behind this policy process, there was a social background of the Minamata-disease. The citizens and the city government had made consecutive efforts to rejuvenate society under the city's environmental plan, the Model Environment-friendly City project, with a shared understanding of "Moyainaoshi." Therefore, when the Women's Committee was established in 1997, a cooperative relationship between citizens and the government had been already established through several city projects such as "Minamata 21 Plan Citizen Conference of 1994", which formed the basis for the Minamata-city Integrated Plan and Minamata-city Environmental Basic Plan of 1996 as written above. Also, there was a common understanding in the 1990s of "no conflict but discussion" when people get together for any activities in Minamata-city since people would not talk to each other if they were on different sides of the Minamata-disease issue a decade ago. Society was split into two: the ordinary citizens vs. Minamata-disease patients' side (Women's Committee 1, personal communication. 12/25/2005).

No problems occurred on the supermarket side due to the fact that food-container removal was naturally accepted by customers. Afterwards, the supermarkets began removing food-containers spontaneously, recognizing the benefits of reducing packaging costs.

There was a remarkable collaborative event on waste reduction by Environmental Clean Center which is responsible for the recycling program (a subsection of Environment Section). Plastic waste materials (including plastic food-containers) were added into recycling materials in 2000, when consumers began buying food not packed in plastic containers to avoid the

inconvenience of recycling. This encouraged supermarkets to remove such containers for food since the food items packed in containers remained unsold. This would lead to the second agreement, in which the removal of food-containers for 22 common and individual items was agreed. Sixteen items out of the committee's original suggestion of 97 items remain unaccomplished at present (Sakamoto, personal communication. 08/25/2006). That is, 84% of the original list has been accomplished.

In addition to the primary objectives, there were some secondary effects. Media broadcasted the activities of the Women's Committee throughout the project (Nishinippon Shinbun 01/14/1998; Kumamoto Nichinichi Shinbun 07/08/1998; Yomiuri Shinbun 07/08/1998; Asahi Shinbun 09/19/1998; Mainichi Shinbun 09/19/1998). The unique idea of assembling housewives contributed to further improving images of Minamata-city as an environment-friendly city. This media coverage induced study group tours from outside of the city. Some committee members became more conscious about environmental issues after joining the committee (Women's Committee 2, personal communication. 12/26/2005)". It would have also promoted environmental awareness of 3,500 members (including direct members from the 16 women's groups), which might have influenced others such as families, friends and neighbors. Since that represented 10% of the population of 35,000 and 30% of 12,000 households, the impact would be strong.

Furthermore, the accomplishment of the goal had a psychological effect, giving rise to a "can-do" spirit. A member of the Women's Committee thought, "I actually felt that the food-containers issue finally moved forward. We should carry this momentum to the next movement of environmental protection and rejuvenation of the city (Sakamoto n.d.a)." Members were impressed when the food-containers were taken away in a sweep in one of the four supermarkets after the first agreement – in her words, she thought, "We made it! Or more like, we *can* make it rather than we made it, and we have to raise our voices! (Women's Committee 2, personal communication. 12/26/2005)." As a long-term effect, the psychological change would

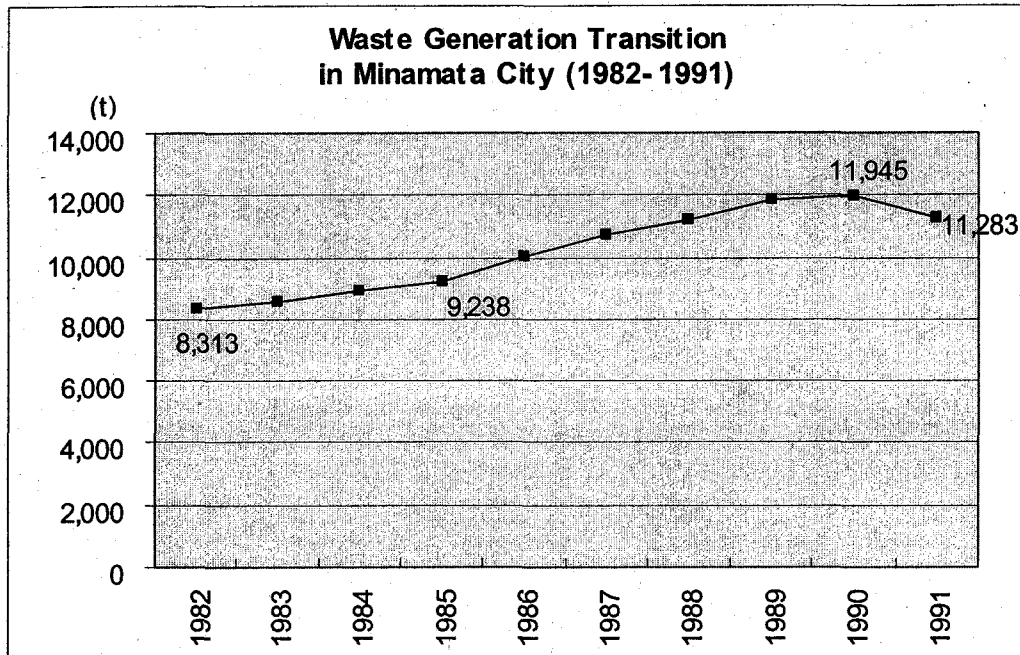
influence the future citizen participation in city administration, giving citizens confidence in their power. It also contributed to mending the relationship between the patients support groups and ordinary citizens through discussions and working on the same purpose of waste reduction (Women's Committee 1, personal communication. 12/25/2005).

In conjunction with the food-container abolition project, Women's Committee has been working on reducing plastic grocery bags, encouraging citizens to use non-disposable bags. According to a recent government survey in a supermarket in the city, 40% of shoppers brought a reusable grocery bag for shopping (Women's Committee 3, personal communication. 12/27/2005). In 1998, it was less than 1% when the city gave away a cloth-type grocery bag to every household by the committee's suggestion (Ori 2002). In addition, with collaboration between the government and the Women's Committee, a new project, "Eco-shop" Certification System, started in 1999, which certifies a shop that conducts its business in an environmentally friendly way. The Women's Committee joined in establishing the project and was appointed as judge to evaluate the shops. Thus, the activity expanded to the other retailers and producers in the city, which are encouraged to change their way of doing business to a more environmentally friendly way, including reducing packaging.

Although there was little evidence of the effect on the second policy on waste reduction, the city's consecutive efforts including the two policies began showing remarkable effects after the second policy. The waste generation has decreased from the peak of 1999: the annual total waste generation (as well as per capita) reduced by 20% in 5 years (Table 4-2 (b) and Figure 4-2 (b)). The combustible waste reduced by 40% – 8,660 t (1999) to 5,100 t (2004) (Table 4-2 (b) and Figure 4-4). The landfill waste reduced by 75% in 13 years since 1991 (Table 4-2 (b) and Figure 4-3). The recycling rate increased in 10 years since 1993 from 9% to 40% (Table 4-2 (b) and Figure 4-5). Also, dioxin generation at the incinerator has been decreasing down to 20 nanograms as of 1997, which is much lower than the national standard of 80 nanograms (Yomiuri Shinbun 04/19/1998).

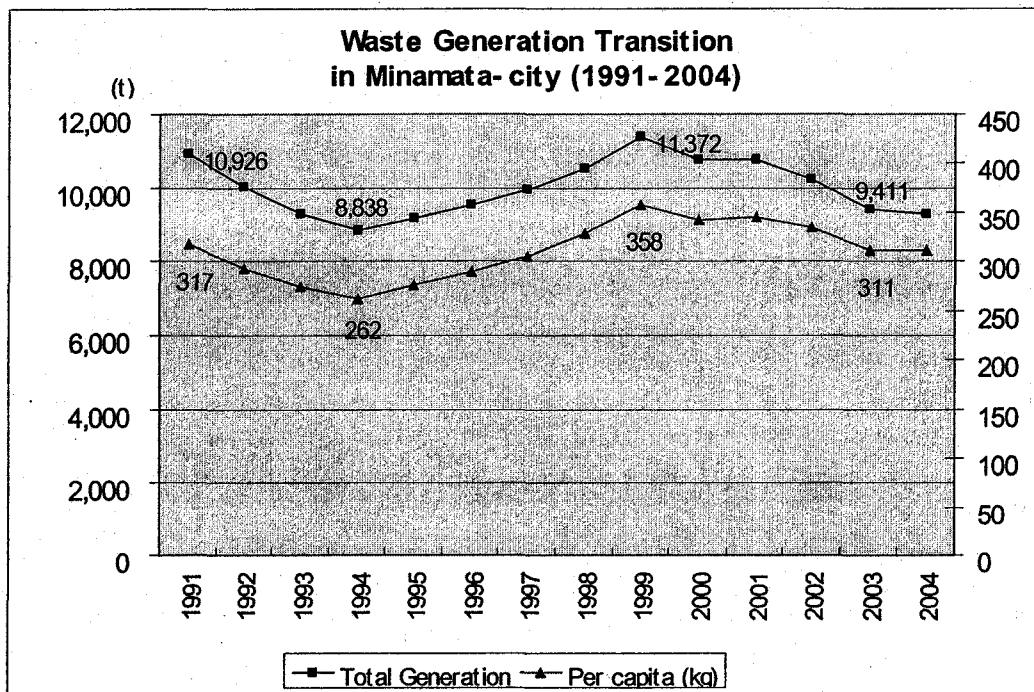
Figure 4-2. Waste Generation Transition in Minamata-city

Figure 4-2 (a)



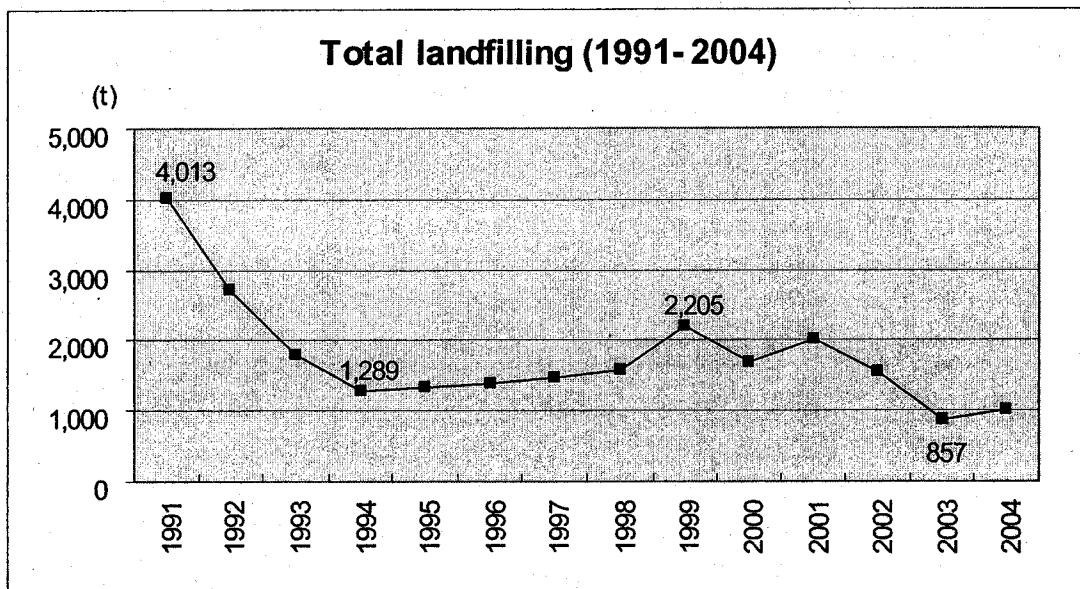
Source: Minamata-city 2004

Figure 4-2 (b)



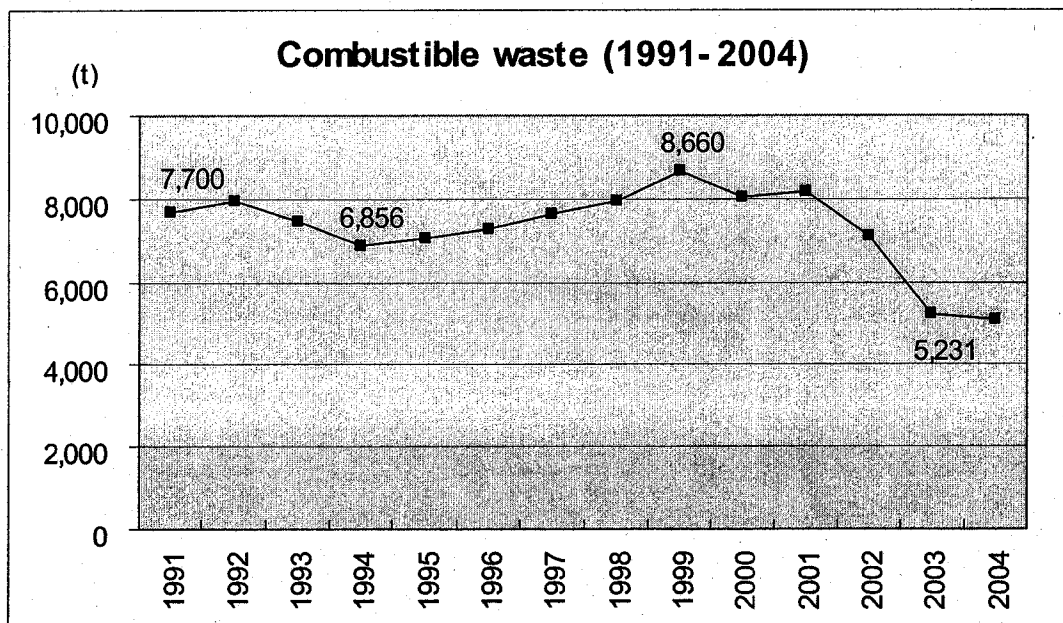
Source: Minamata-city 2004

Figure 4-3. Total Landfill Waste Transition in Minamata-city



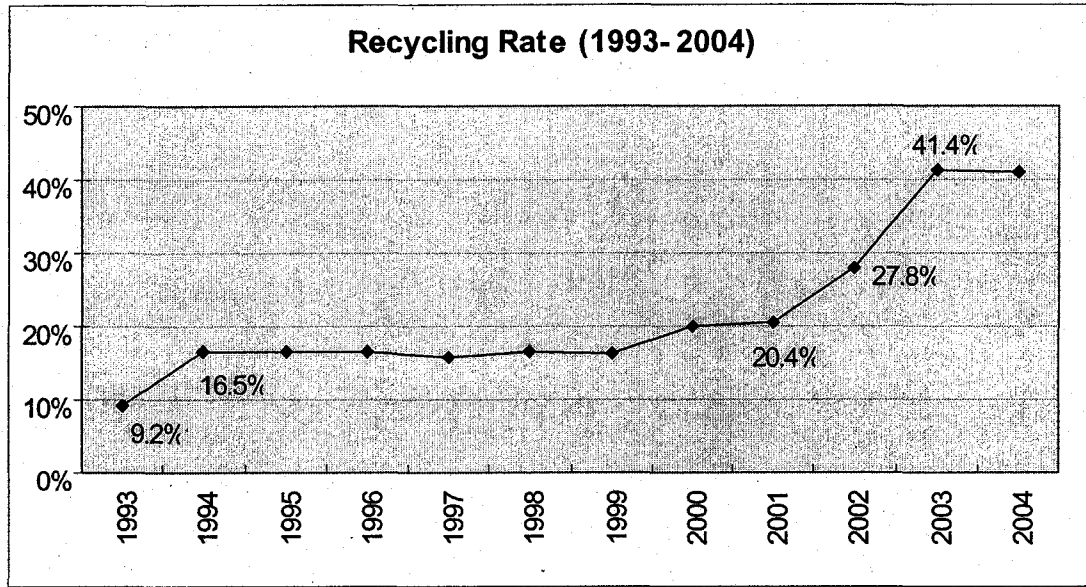
Source: Minamata-city 2004

Figure 4-4. Combustible Waste in Minamata-city



Source: Minamata-city 2004

Figure 4-5. Recycling Rate in Minamata-city



Source: Minamata-city 2004

Decision Process Mapping

Following are the summary of Decision Process Mapping in each policy (see detail in Appendix E: Decision Process Mapping). For the explanation of each decision function, please see Table 3-1 in Chapter III.

I also provide the participants in the decision process as below (Table 4-5):

Table 4-5. Major Participants in the Decision Process

Participants	Tasks	Functions
Recycling Program		
Members, Task Force (1992 Jan- Nov)	Investigated the waste problem of the city, and reported with the provision and alternatives	intelligence, promotion, prescription
City officials in the program implementation (1993-1994)	<ul style="list-style-type: none"> - Joined the explanatory meetings with residents - proctored the Recycling Program at the collection stations as instructors - Improved the way of waste treatment in the Environmental Clean Center 	promotion, application
Local residents	<ul style="list-style-type: none"> - Joined the explanatory meeting - Participated (operated and maintained) the Recycling Program 	promotion, application
Media	Reported the recycling activity (after application)	intelligence
Key persons	Recycling Program Coordinator	all functions*
Food-containers Abolition Project		
City government	<ul style="list-style-type: none"> - Established the Women's Committee - Led the committee meeting as the secretariat - Mediated the committee and the shops 	all functions*
Members, Women's Committee	<ul style="list-style-type: none"> - Discussed the problem, suggested alternatives - Conducted on-site investigation - Discussed with the supermarkets 	all functions*
Four supermarkets	<ul style="list-style-type: none"> - Joined the discussion with the Committee - Implemented the policy 	promotion, application
Media	Reported the project (during intelligence, promotion; after application)	intelligence
Key persons	Ex-mayor Section Head	- all functions*

* except for termination and appraisal

Recycling Program. *Intelligence*, where relevant information is collected and communicated, was conducted in a sound way. As an opening, the status of waste was set as one of the environmental issues. To identify the problem, the Task Force gathered all the information relevant to waste such as trends, current status (amount, composition), the present waste management system, the cost, and citizens' perspectives on waste, which was collected from each source by reviewing past records, site investigation, visiting another city, and hearing from on-site workers and local residents. Based on this thorough investigation, the project goal was set: to create a new waste management system to harmonize with the city's environmental project (the Model Environment-friendly City). At the same time, the city's social problem (Minamata-disease) was also taken into account and was included in the goal as a central matter. A final report was issued within six months of the project's start.

The mass media played a significant role in *intelligence*, broadly reporting the recycling activity, which brought respect and high reputation to the citizens and eventually contributed to the rejuvenation of the city.

Prescription, a central phase of the policy process that creates rules or regulations, was conducted based on the problem situation and the goal clarified in *intelligence*. A recycling program was proposed as the only appropriate and effective alternative option to reduce the waste amount in that 90% of the non-combustible (landfill) waste was found to be recyclable (Minamata-city 1992). According to the goal in terms of the social aspect, "citizen participation" with "manual operation (instead of mechanization)" was stressed at the core of the recycling program, with the prospect of re-uniting inside the broken community.

Promotion is the function of recommending and mobilizing support for policy alternatives. More than 180 explanatory meetings were held by the city government with local residents in each administrative district within six months. Nearly 70% of the household attendance showed high public concern about the issue (see detail in Appendix E). Via face-to-face discussions, where complaints and questions of the local residents were resolved by

city officials who shared all the information openly and frankly and encouraged the citizens for environmental protection, the government successfully gained citizens' understanding and cooperation in the program. As well as outreach efforts of the city officials with their great sincerity and enthusiasm, the new approach of the city government proposing "working together" (instead of conventionally ordering from the upper position) moved the local residents, who for the first time could express their opinions directly to the government (Women's Committee 1, personal communication. 12/25/2005). To further promote the program, waste symposiums and recycling festivals were held under the cooperation of the governments and the citizens.

In *invocation* and *application*, adoption and implementation of the *prescription* were accomplished. The Recycling Program was put into practice in a timely fashion without missing the window of opportunity. The concepts and schedules of implementation wholly followed the *prescription* stipulated in the Final Report. Initiatives were left to citizens in the program implementation: the recycling sites and schedules were decided by local residents; the Recycling Committees selected among local residents (see Appendix E) managed the program. The city officials visited the sites to help and lead residents with material separation everyday for an additional six months, which made the program work smoothly afterward and in the future with less conflict and protest. In this way, the program successfully settled down within one year after being introduced, which was unusually quick (another city had taken 10 years before the program became well accepted by the citizens through the mayor's effort to visit the sites everyday) (recycling program coordinator, personal communication. 12/26/2005).

Termination (cancellation of existing prescriptions) is not completed since the recycling program is still ongoing. The effect of the program has been tracked by the city government, and citizens have been kept informed through city reports.

Appraisal is the function where the success or failure of decision process is officially and regularly evaluated according to the policy objective. In this policy, the city government as a leading organization did not conduct this function.

Key participants:

The recycling program coordinator (hereinafter, Program Coordinator) was the key participant of this policy in that he was involved in all the Decision Process from the beginning (a member of the Task Force) and later became the recycling program coordinator, appointed to implement the recycling. Previously working for the City Planning Section, he had a great concern about the rejuvenation of society, and thus, eventually came to the idea of combining the social problem with the new waste management alternatives, which became the heart of the program. He strongly emphasized getting *everybody* to participate in the decision process, not only citizens, but also workers in charge of waste collection (who usually ranked in lower status in the society) who tended to be ashamed of their work, thus having little motivation. The Program Coordinator got them involved from the beginning of the program as equal partners, bringing them to the explanatory meeting and placing them as instructors at the recycling site. Regaining their confidence, they eventually became more motivated to their work.

Food-containers Abolition Project. In *intelligence*, the decision process started with clarifying the goal (waste reduction) to the members of the Women's Committee. In addition, principles (rules) for carrying out the project were created, such as "no conflict" and "no leader in the committee," based on the Minamata-disease experience. Committee meetings were held often (4-6 times a month). The problem was investigated through hearing opinions from a supermarket, visiting a city with successful experience in the issue, and surveying consumers. From the results, the near-term goal (food-containers reduction in supermarkets) was fixed. On-site investigations by the committee in the four targeted supermarkets revealed that food-containers for 97 items could be removed. The committee meetings were held by the government's call although the members' requests were reflected. The media broadly and repeatedly reported the process of the project from the beginning to the present.

Discussion meetings between the committee and the supermarkets with the government

were held in the *promotion* phase, in which results of investigations by the committee were presented to the shops, and perspectives of both sides (demands of the committee and anxieties of the supermarkets) were openly and frankly expressed. Through discussions, problems were clarified, the cooperative relationship between the participant groups developed, and eventually a common goal was attained. The participants had a shared understanding that they were working 'at the same table' (implying cooperation as equal partners) (Women's Committee 2, personal communication. 12/26/2005).

In *prescription* (and *invocation*), the formal agreement was created: "Food-containers Abolition Agreement (1st and 2nd)"; the contents (e.g., removable items) were accepted by the four supermarkets. The due date of the implementation was not specified in the agreements.

In *application*, the four supermarkets willingly and quickly complied with the agreements and even showed voluntary efforts beyond the agreements afterwards. The project goal (agreements) was achieved in a short time (1 to 2 years) after the city had taken 10 years with negotiation with consumer groups and shops (without involvement of the city government) (Women's Committee 3, personal communication. 7/25/2006). The policy (including the audits of the shops) is still ongoing, replaced by another project, the "Eco-shop" Certification System (see Appendix E). Therefore, *Termination* has not been conducted. In addition, appraisal has not been conducted, so long as some committee members (unofficially) have remanded the whole initiative to the committee, claiming that the government's institutional change often affects the committee's activities.

While the committee took initiatives in decision making, the government supported the committee as the secretariat performing cumbersome clerical work such as scheduling meetings and creating documents, as well as acting as a broad information source (e.g., contacts with other municipalities). It also played an important role as mediator between the committee and the supermarkets in setting discussion and arranging the on-site investigations.

Key participants:

There were two important persons behind this policy: 1) the city mayor at that time (hereinafter, the ex-mayor) and 2) the Section Head, the Environment Section at that time.

The ex-mayor greatly contributed to the rejuvenation of the society with his two administrative policies: the resolution of the Minamata-disease problem (politically and socially) and the establishment of the Model Environment-friendly City – he highly focused on environmental issues despite some provocation from citizens who claimed that the city should earn money rather than devote resources to the environmental issue (ex-mayor, personal communication. 12/25/2005). He showed strong leadership in the city administration, utilizing human resources by leaving initiatives to his subordinates and citizens. Such leadership attitudes as openness (sharing information and power), shouldering responsibility, and respecting the individuality of each city official and citizen seemed to penetrate into the entire city administration and were well-reflected in the policy process of the city projects during his era (vice chief, Environmental Planning Office, personal communication. 12/27/2005; Yoshii 2002, Yoshii and Joko 2004).

The Section Head (as of 1997, the assistant manager) created the foundation of the environmental policies. He had been transferred to the Environment Section from the previous City Planning Section, where he had contributed greatly to the rejuvenation of the society and the resolution of the Minamata-disease problem, his personal goal (section head, Environmental Measurement Section, personal communication. 12/27/2005). People describe the Section Head as a 'person of ideas' (ex-mayor, personal communication. 12/25/2006; Women's Committee 1, personal communication. 12/25/2006; vice chief, Environmental Planning Office, personal communication. 12/27/2005). His unique perspectives and creative ideas, beyond the conventional way of thinking, were well reflected in the city administration in such principles as: "turn the energy of conflict to the energy of creation," something that was learned from the Minamata-disease experience (section head, Environmental Measurement Section, personal

communication. 12/27/2005). The idea of reducing waste at home (that led to the establishment of the Women's Committee) also was derived from the Section Head, who was in a position making him responsible for the entire area of waste management (both waste reduction and the recycling) in the Environment Section. Focusing on housewives came from his observations that: 1) it is women who mainly do grocery shopping (especially in Japan); and 2) since women work by inspiration (good or bad, like or dislike), their actions are quicker than those of men who move with logic (section head, Environmental Measurement Section, personal communication. 12/27/2005; Women's Committee 1, personal communication. 12/25/2005). The principles the section head introduced in starting the Women's Committee project ('no leader, no conflict') were well accepted among the committee members (Women's Committee 1, personal communication. 12/25/2006).

Case Study Report: Summary and Findings

This section provides a report of Minamata-city with a brief summary of the two focused policies and the findings obtained in light of the research questions for the case study (Appendix C). With regard to the characteristics of the two policies, I determined the factors that contributed to the success of the policy processes.

Summary

There are some specific characteristics in the focused MSW policy processes of the Minamata-city case study. First of all, as a background, Minamata-disease concerns were deeply rooted in the society which had affected the economy, people's health, and minds; that experience was also reflected in the government's administrative approaches in creating policies. Despite different perspectives under the conflicts, everybody (citizens, patients, and the city governments) had a common wish of "Moyainaoshi" in the early 1990s. People had more concern for the environment than in other regions due to the tragic experiences of environmental pollution behind

the high economic growth of Japan.

The city turned its path from the city of “environmental pollution” to a Model Environmentally-friendly City. It began with the waste problem in crisis at that time, placing it at the center of the project. The city established the waste management system in two steps, in parallel with the city’s entire environmental project.

The Recycling Program was the first turning point in the city’s waste management, and that laid the foundation of the present MSW management system, changing people’s view of waste from a dirty thing to a valuable resource. It was also a great step toward the “Moyainaoshi” and in the Model Environment-friendly City Project in that it: 1) established a trusting and cooperative relationship between the city government and the citizens; 2) regained long-lost communication in community; 3) further developed environmental consciousness; and 4) created the examples of citizens’ participation in the city administration. The second turning point was the establishment of Women’s Committee on Waste Reduction, with which the city changed the direction of the waste management from the recycling-dependant to source reduction. With these two steps, the city established the sound waste management system with two aspects, combating waste at the ‘entrance’ (waste source reduction) and the ‘exit’ (material recovery). Through consecutive efforts in waste reduction with the two policies, the city has successfully reduced the waste and regenerated the society. There is no doubt that the two policies reflected learning from the Minamata-disease experience, things such as the “Kyodo” mind and a principle of “no conflict but discussion.”

In summary, the characteristics of the two focused policy processes included: 1) desires and learning derived from the Minamata-disease; 2) the government’s efforts (enthusiasm and creativity); 3) high citizen participation; 4) honest, open, face-to-face discussion; 5) prompt initiation and accomplishment; 6) a clear goal; 7) important role of women as housewives; 8) the media’s contribution.

Findings

The followings are the findings in terms of the research questions, obtained through the descriptive studies above.

- **How did the social/ historical context of the city influence outcomes of policy- making processes of the two focused MSW policies?**

The city began with waste problem as an entrée to tackling the whole environment of the city with the idea that Minamata-disease was originated in the *waste* of an industry, which polluted the ocean (*water*) and *food*, and then polluted *people* (ex-mayor, personal communication. 12/25/2005); that is, all environmental issues are interconnected.

From the Social Process Mapping above, Minamata-disease experience lay at the heart of every aspect of the society. There was a high environmental consciousness among citizens behind the two policies. Despite different perspectives and statuses in conflicting situations, every citizen had common desires: 1) to get out of this chaos and rejuvenate society; and 2) to recover the communication between people with no more conflict. The government had been looking for a way to realize the citizens' desires. With this background, the first MSW policy included solving the social problem at the center of the policy as well as solving the waste problem. Through the efforts of citizen groups and the city government in solving the Minamata-disease case, people had a shared understanding of "no conflict, but discussion," and a cooperative/ collaborative relationship between the city government and the citizens developed when the second policy was initiated. The existing policy foundation helped the success of the second policy.

- **Which participant groups played an important role in the decision making process of the two focused policies?**

The city government:

The success of both policies can be greatly attributed to the city government's intervention as a leading organization. In the recycling program, government's behavioral change--encouraging high levels of citizen participation, stressing collaboration with citizens, and lowering barriers between the government and citizens--had psychological effects on citizens, eventually gaining their understanding and cooperation in the program. As for the food-containers abolition project by the Women's Committee, the government used its political power to play an important role in mediating between the committee and the business enterprises, which led to the official agreement.

Citizen/ Citizen Groups:

Citizens played an important role as major actors in implementation of the Recycling Program. Without their willing participation, the program would not have succeeded, even though the program design was perfectly sound. In the Food-containers Abolition Project, the Women's Committee actively worked for the goal of the project and made central decisions.

Women:

Women (as housewives) contributed to the success of each policy since they mostly control housekeeping duties, including home garbage handling in Japan. It is women who shop, cook, and separate waste materials at home. Their perspectives as housewives led to the idea of reducing food-containers and grocery shopping bags in supermarkets. Women were also contributors to the Recycling Program, since they manage home waste and separate for recycling.

Media:

Although it did not join in the beginning of the policy processes, the media contributed to re-enforcing the city's efforts in waste reduction by widely reporting the city's performance outside of the city. In the recycling program, it helped citizens regain long-lost confidence as Minamata-citizens, bringing recognition and respect to the citizens from outside of the city. Thanks to media reporting, visitors from schools and other municipal bodies rushed in for study tours, and companies came to the city for business. Such financial benefits were important for encouraging further efforts in the city.

- **Which decision functions were most emphasized in the Minamata-city case study?**

Through the Decision Process Mapping, I found that *intelligence*, *promotion*, and *application* were main elements in the two focused MSW policies.

In Recycling Program, identifying the problem and clarifying the goal based on the thorough investigation in *intelligence* phase led to the sound *prescription*, a new waste management system which harmonizes with the city's entire goal as a Model Environment-friendly City. However, without the *promotion* (explanatory meetings), the program would not have been accepted by the local residents. It changed the citizens' attitude from complaint to motivation and made the program work smoothly without protests (in *application*). In addition, the government's great efforts in the *application*, continuously visiting the recycling site, ensured the success of the program. Leaving the local residents in charge of program operation and maintenance has led to the long-term success, continuing even to the present. In the Food-container Abolition Project, the recommendation of the Women's Committee, based on the on-site investigation, was reliable and convincing to the supermarkets (*intelligence*). The face-to-face discussion between the committee and the supermarkets fostered the understanding of each other's perspectives and made a cooperative relationship (*promotion*), from which the acceptable and available *prescription* was developed. The successful promotion also led to the

long-term effect of supermarkets' willing cooperation in the implementation. In *application*, the official agreement was set in the presence of the city mayor. That legal force urged the four shops to implement the *prescription* absolutely. In addition, regular audits by the committee may help the shops to comply with the agreement afterwards.

Among the three important functions, I found the *promotion* function is the most important element which led the two policies to success.

- **Were the policy processes of the two focused MSW policies perfectly sound according to the criteria (see "4. Criteria for the assessment of the focused MSW policies in the Minamata-city case study" Appendix C)?**

(1) Did the two policies focus on *reducing* waste generation at the source rather than on the post-treatment of waste generated?

Through the two policies, the city realized that recycling does not mean the reduction of total waste generation. A new dual effort to combat waste by reducing waste generation at the source and by recycling waste materials generated began; each is controlled by separate sections under the Environment Section in the city government – the Environmental Planning Office for the reduction and the Environmental Clean Center for the recycling.

(2) Did the two policies take into account the connection with whole environmental problems?

Under the concept that the waste problem is one of the major environmental issues in the city, the city has promoted other environmental projects in parallel with solving waste problems, such as the protection of the sea and forest, as well as environmental education in its Model Environment-friendly City project.

(3) Were perspectives of all the participants (especially citizens) evenly reflected in the decision making?

Although the Recycling Program was created by the city government, the goal of the project reflected the perspectives of all the citizens, that is, a common wish of citizens was included. During the Food-container Abolition Project, all the participants (citizens, government, and shops) were involved with equal status, and every participant group agreed to the final decision.

(4) Was the policy well accepted by every participant, especially the major actors in application before it is enforced? Were all the participants satisfied with the outcomes of the policy?

In the first policy, the local residents understood the policy through the explanatory meetings prior to the program implementation and willingly participated in the implementation. Now, thirteen years later, the program is well accepted by the citizens as daily custom. Moreover, the citizens are proud of their recycling activity because they are protecting the environment, and they even enjoy the program as a means of communication among local residents. In the second policy, the *prescription* was well accepted by every participant group. The Women's Committee enjoyed the accomplishment of their goal, as did the city government which wanted to reduce waste, and the shops which realized an advantage from the project by cutting the packaging cost.

(5) Did the policy have desirable outcomes and effects?

(5)-1. Did the focused policies contribute to the waste reduction? (e.g., were there any statistical changes in amount of waste generation or recycling rate compared to before the policy started?)

The first policy created the foundation of the city's MSW management system, changing

the point of view from that of waste disposal to resource recovery. It was effective on waste reduction, especially on the landfill waste and expansion of the present landfill lifetime (see "Policy Process Overview" above). In the second policy, the city made another drastic change in its waste management, turning its attention from a recycling-dependent policy to waste source reduction. Although the second policy did not show any significant statistical change in waste reduction, it has surely reduced one type of waste materials, styrofoam food-containers, by removing 84% of those previously used in four supermarkets. In addition, the Women's Committee's long-lived effort to encourage shoppers to bring their own bags instead of taking plastic grocery bags contributed to changing consumers' habits (that recently accomplished 40% from 1% in the beginning of the project).

In addition, through the consecutive and cumulative efforts on waste reduction from the early 1990s represented by the two focused policies and additional recycling material separation (such as organic waste), the city showed remarkable results both in waste reduction and in citizens' life styles (see "Policy Process Overview – Food-containers Abolition Project" above).

(5)-2. Were there any changes in citizens' behavior (or consumption pattern) to more environment-friendly way as a long-term result?

Citizens (as consumers) became more aware of environmental issues in daily life, such as buying products which are environment-friendly or create less waste.

• What (which) factors led to the successful establishment of the two focused policy processes in the Minamata-city case study?

From the summary and the findings above, I summarized the key factors that made the two focused policies to be successfully implemented:

High level of crisis

In each policy, the waste problems were important public concern. There was the danger of incinerator explosion and the limited dumping space by increased MSW amounts, both of which caused the city government to take drastic and immediate measures, and also convinced the actors (e.g., citizens, shops) to implement the program in spite of the unusual alternatives.

Social aspects: Minamata-disease experience

Each policy greatly reflected learning from the Minamata-disease experience, and the citizens had a shared understanding from the experience, such as:

- High environmental consciousness
- “Moyainaoshi”: common wish to rejuvenate society
- “Kyodo” mind: everybody working together as equal partner
- Shared understanding of ‘no conflict but discussion/ cooperation’

City government’s effort

The city government showed strong leadership, enthusiasm, and creativity. As a leading organization, it initiated the two focused policies, encouraging high citizens’ involvement. As an authoritative body, it accomplished participation from all stakeholders. Especially in Food-containers Abolition Project, the government played a role as a mediator, successfully involving business enterprises in discussion meetings. Also, it exhibited a behavioral change, asking to “work together” instead of issuing orders from above.

Citizen participation

The high level of involvement of citizens left the initiative with them. The psychological effect was big in that citizens felt they were part of the process as major participants.

Open, face-to-face Discussion

Open, honest, face-to-face discussion between participant groups resolved conflicts, complaints, and anxieties, and eventually led to the establishment of a trusting and cooperative relationship between participants, who bore a willing cooperation of the major actors in policy implementation phase (e.g., citizens in the first policy; supermarkets in the second).

Problem orientation, goal setting

In the first policy, thoroughly orienting the problem situation clarified the goal in terms of MSW, finding appropriate alternative solutions which comprehended all social aspects, and eventually led to the favorable outcome the community desired most. In the second policy, clarifying the common goal in the early stages of the policy process helped the participants to be prevented from getting out off track and avoided conflicts between them.

Timeliness and rapidity of policy application

Each policy had a lot of momentum, and were initiated and implemented.

Media's role

The reputation and attention the media brought from the outside further promoted the two policies to move forward. Especially in the first policy, the media played a significant role in rejuvenating a broken society, regaining citizens' confidence.

Financial benefits

The financial benefits related to waste management policies further motivated the citizens to participate in the city's environmental efforts as well as the two policies., Profit gained by selling recyclables was an especially strong direct incentive in the first policy.

Past policies' success

In the second policy, process went smoothly because the success of the first MSW policy had already established a trusting/cooperative citizen-government relationship with high citizen involvement in the city administration.

In the next chapter, I explore whether or not those factors can be generalized, comparing them with other studies. Also, I determine which factors are most important among all, reflecting my perspectives.

CHAPTER V

DISCUSSION AND CONCLUSION

In this chapter, I discuss factors that led to a successful policy process in MSW management with the assessment of Minamata-city case study. I then draw conclusions, addressing how to improve the policy process on MSW management issue in a community.

Case Study Assessment: Factors in the Policy Process

- **Can those factors which were obtained through the Minamata-city case study be generalized?**

Level of Crisis

There was a high level of crisis in waste problems that forced the Minamata-city government to take drastic action. The big explosion of the incinerator facility prompted fear among citizens and convinced them to accept an unusual new alternative policy. Without this factor the given environmental problem was not widely recognized among stakeholders. There is, however, always a crisis at some level whenever any environmental problem occurs. The difference is whether or not it has been perceived as a crisis. One could say that it is not a lack of crisis, but a lack of differentiation due to a lack of information. The solution to this is to inform the participants about the seriousness of the problem. The information should be reliable and strong enough to convince the stakeholders about the crisis. Thorough investigation should be conducted for problem orientation. As a strategy to widely communicate the information and enlighten the stakeholders, holding relevant events such as campaigns and open forums would help, as would involving the media.

Environmental Consciousness

There was already shared understanding of the importance of the healthy environment among people in Minamata-city due to its past experience with Minamata-disease. This encouraged participants to accept policies relevant to environmental protection. Although it was a particular issue to the city, establishing higher environmental consciousness among stakeholders could have been a general key factor. It is possible to improve environmental consciousness by grass root activities by citizen groups, non-governmental or non-profit organizations by holding environmental campaigns and open forums and providing environmental education at schools. To widen the impact of these activities, using the media can be a strategy.

Key Participants:

Who play an important role in decision process?

Citizen Participation

As discussed in Chapter III, many studies emphasized the importance of 'citizen participation' in decision processes for success of natural resources conservation policies, including waste management programs (e.g., Wilshusen 2000; Folz 1999; Becker 1993). Also in the Minamata-city case study, high citizen participation in both focused policies led to the successful accomplishment of the policy goal.

While the quality and level of citizen participation is often discussed (Wilshusen 2000; Becker 1993), citizen participation in the two focused policies in Minamata-city was the *actual* participation in which the initiative was left to citizens. In the Recycling Program, the city government incorporated citizen participation in the program design as the central matter. To achieve high citizen participation in program implementation, the government held explanatory meetings with citizens prior to the program implementation, which eventually led to the citizens' understanding of the policy and their willing cooperation in the implementation phase. In the

Food-containers Abolition Project, the Women's Committee as representative of the citizens and consumers was actively involved in the entire decision process, taking initiatives in discussion, and making central decisions. Their participation resulted in the appropriate alternative policy that reflected the perspectives of consumers. As the case study demonstrated, citizen participation in the early stages of the decision process is a strong key factor. Both Wilshusen (2000) and the Recycling Program Coordinator of Minamata-city admitted that citizen participation takes longer, but it is the only way that lead organizations can obtain trust from citizens and increase the credibility of a program, reduce conflict and increase durability of project results. It may be the necessary ingredient for long term success.

As Wilshusen (2000) discussed, Minamata-city case study showed in practice that it is possible to raise the level of participation as a project proceeds. The level of citizen participation was improved between the two policies. According to the seven levels of local participation (Wilshusen 2000:300), the level of citizen participation rose from the Level 2: participation in information giving (the first policy) to the Level 6: interactive participation (the second policy). As Wilshusen (2000) argued that successful citizen participation depends on a leading organization's efforts. In the two focused policies, it was the city government's effort to get citizens involved, treating them as major participants in the decision making process.

All Stakeholders

One of the unique characteristics of two MSW management policies of Minamata-city was that not only citizens, but also *every* stakeholder was involved in the decision process. The Recycling Program aimed at involving, not only citizens, but also the workers in charge of waste collection as equal partners in the program. In the Food-container Abolition Project, all relevant participant groups (citizens/ consumers, supermarkets, city government) were involved in the decision process. What is learned here is that every participant related to a given issue should participate in the decision process so that their views are integrated. This follows the definition of

'public participation' introduced by Becker (1993).

This case study also demonstrated the roles of participants with different perspectives. In the Food-containers Abolition Project, the city government initiated the project as the leading organization, having an integrated goal of waste reduction. It also played the role of a mediator as well as a power body to authorize the agreement. The Women's Committee, as a representative of consumers, made a request of food-container abolition and also conducted grassroots activities to educate the consumers to change their shopping behaviors. The four supermarkets were the major actors who were to implement and maintain the project. In the Recycling Program, while the city government suggested the *collaborative* work between the government and the citizens, it also introduced citizens to the new idea of shared responsibility, that is, *different roles* of the government and the citizens in implementation of the recycling program. The recognition of the different roles and perspectives of each participant group may be a key factor to efficiently achieve goals in the decision process.

Therefore, to accomplish the policy goal, 1) every stakeholder should be involved, and 2) work in cooperation toward the common goal while performing different roles in the decision process; and 3) the actual citizen participation is especially important in that they become the major actor in the implementation phase of a policy.

Governmental Bodies

As MSW management is included in municipal services, municipal bodies have a responsibility for proper management and waste reduction. MSW problems can not be solved without governments' interaction. Thus, municipal bodies must lead the project.

The two focused MSW policies in this case study showed the importance of the city government's interaction for successful establishment of the policy processes. It played several roles as leading organization, mediator, and authoritative body. The city government fulfilled its role as a leading organization, getting other stakeholders to participate in the decision process. As

an authority, the government had a power to authorize and enforce rules in each policy. In the Food-containers Abolition Project, the interaction of the city government gave more credibility to the project which removed the suspicions of the business enterprises. In addition, its role as a power body put pressure on businesses to take the issue seriously. The Kochi-city's case further support this conclusion in that the city took 10 years to achieve their policy goal of reducing food-containers in supermarkets without the involvement of the city government, while Minamata-city accomplished the goal within two years. As the two policies of the case study showed, official organizations' interactions are inevitable in MSW management policy process, in that they have a power to involve the other participant groups in a decision process, and that they are the only ones who can authorize and enforce official regulations.

Media

The other actor who played a significant role in the policy processes in the Minamata-city case study was the media, further supporting promotion and continuation of the policies. Repeated media reports all over the country helped the city to rejuvenate the broken society, building a pleasant reputation for the city. The focus of outside media motivated citizens to maintain their efforts toward the environmental protection. Borrowing the words of the ex-mayor (ex-mayor, personal communication, 12/25/2006), "people will recognize the importance of their efforts for the first time when they received evaluation by others." In this sense, the media provided participants an opportunity to receive a fair assessment of their performance in policy process. In the Food-container Abolition Project, the media sensationalized the event, which I believe further encouraged the project toward the goal, especially pressuring the shops to cooperate. This case indicated that the media can also put pressure on the institutional bodies such as governments and business enterprises.

Although it was not so in the case in Minamata-city, the media can be used in the early stages of the decision process by communicating information to promote or initiate a program,

and by advertising the seriousness and importance of the problem. When the public is well informed, it may have power to force the authorities and business enterprises to take action. Information is power. The media's role is to provide the public an opportunity to assess policy process in an objective and a fair manner within and outside of the context.

In summary, the important elements of participation in policy process are:

First, all stakeholders must join the decision process, especially those who actually implement the policy in the early stages of the process (not only the implementation) to successfully complete the policy process. To motivate the participants in implementation, they need to know the importance of the policy by joining the investigation and discussion process, where the problem and the goal were clarified, and the alternative solutions (which are agreeable to themselves) are created. Second, while working under the collaboration to accomplish one goal, it is important to know each actor plays an important but different role using different base values (e.g., skill, power) (see Chapter III) as strategies. Thirdly, among all the participants, citizen participation should be especially emphasized since they are often excluded in the central decision process despite the fact that they are key stakeholders in environmental conservation programs. They are major actors in program implementation; and they are sometimes part of the problem of environmental degradation.

Problem Orientation, Goal Clarification with Social Aspects

Review of the policy process analytic framework (Clark 2002) and some professionals in policy process sciences suggest (e.g, Lawrence 2000), clarifying the problem situation and integrating the common goal among participants in a natural resources conservation program is important. This case study also showed the importance of goal clarification at the early stages in the decision process. In the Recycling Program, identifying the current situation based on thorough investigation clarified the defects of the existing waste management system, identified the specific policy goal, and eventually led to the sound alternative which harmonized with the

city's integrated goal – establishment of Model Environment-friendly City. As an initial step of Women's Committee on Waste Reduction project, the objective of the committee was clarified to the members, which helped members stay on track and remain motivated to achieve the policy goal.

In Minamata-city, the policy process recognized the social problem, Minamata-disease. In Recycling Program, besides the primary objective of waste problem solving, the city's common wish, "Moyainaoshi" – reconstruction of the inner society – was incorporated in a project goal, which eventually led to the favorable outcomes in both the waste management and the society. Even though Minamata-city's social aspect is unusual, to comprehend different perspectives of various participants in a specific context is always a common key factor because natural resources problems are social problems in that the value conflicts of people causes low communication levels and hampers collaboration (Lieberknecht 2000; Clark 2002).

As the two policies in this case study make clear, it is important to integrate a policy goal with all the participants' perspectives in the problem context and clarify it to all the participants as a first step.

Creation of Principles

In each policy of the case study, common principles for conducting the process were established in the early stages of the project, based on its Minamata-disease experience. "Kyodo" mind – everybody work together, "involve all the citizens," and "operate by humans' hand instead of mechanization" were emphasized as pillars of the Recycling Program. In the Women's Committee project, there was shared recognition such as "no conflict but discussion" and "at a same table" (indicated "Kyodo" mind) among members. I found such principles function as guidelines and characterize the policy process. It is one of the roles of a leading organization to set these guidelines. However, there was no supportive argument found from other studies.

Face-to-face Discussion

In the policy process framework, the *promotion* function is one of the important elements in the decision process. To have a comprehensive understanding of all participant perspectives is critical (Clark 2002; Garen 2000). Decision Process Mapping of Minamata-city case study showed the open, honest, face-to-face discussion in this function as the strongest factor for successful implementation. In the Recycling Program, through the explanatory meetings, the city government successfully gained local residents' understanding and cooperation in the program. Such direct contact alleviated the local residents' protests against the program and the conventional distrust of government. Without this function, the program would not have accomplished the goal, even though the program was perfectly sound.

What effect does this 'face-to-face contact' have on the participants? There was a large psychological effect in that the citizens, for the first time, had an opportunity to express their opinions directly to the government (Women's Committee 1, personal communication. 12/25/2005). Also in the Food-containers Abolition Project, the open and honest discussion held among all participant groups allowed them to clarify the shared problem to be solved, to find a common goal, and led to the win-win solution that benefited every participant group. The success of this policy was that the shops completely understood the meaning and importance of the policy, although their own financial benefit from the outcome of the policy was an additional incentive. Through the repeated meetings, where the demands and anxieties of all the participant groups were expressed frankly, the cooperative relationship between participant groups was firmly established. That bore a long-term effect in that the major actors in policy implementation (the four supermarkets) made further efforts voluntarily beyond the official agreement. If the city government forced shops by regulations or laws, they would not likely be willing to implement the policy, and effectiveness would have become low in the long run.

With the Minamata-city's case study and other policy sciences studies, I found the main advantage of face-to-face discussion is that the every stakeholder gains understanding of each

other's perspectives and also of the meaning of the policy of a given issue. A trustful relationship among participants can be established which is a key to successfully establishing a policy with the least conflict in the later stages, such as implementation, and in maintaining the program in the long term.

With the fact that the participation of major actors of policy implementation phase (citizens in the Recycling Program and the four supermarkets in the Food-containers Abolition Project) in each policy was a key for the program success, I found it is especially important to have the face-to-face discussion with the major actors among all stakeholders. Wells (1994, cited by Wilshusen 2000:273) supports this idea.

Power Sharing

As described above, the city government played the role of a leading organization in Minamata-city's case study. Its efforts showed how a leading organization should behave for a successful and effective policy making process. The government took a stand as a supporting group but did not take a major lead in the process, leaving the initiative to citizens. In the Recycling Program, the local residents controlled the program's operation and maintenance; and it was the local residents who were appointed to conduct the study tours of the recycling site. This self-pride of the local residents as they controlled the program must have become an incentive. As for Food-containers Abolition Project, the Women's Committee took the initiative in discussing with the shops and made decisions while the city government supported them as a secretariat. The recognition that they were in the central position of the process with full responsibility must have further raised their motivation to accomplish the goal. These are examples in which the government as a leading organization in the policy process shared power.

As in Wilshusen (2000)'s study, Minamata-city government's power sharing obtained citizens' trust and established the cooperative relationship between the government and the citizens. As Wilshusen (2000) showed, projects with the highest power sharing accomplished the

highest level of participation. Power sharing by leading organizations at the early stages of the decision process accomplished actual citizen participation in Minamata-city case study. If leading organizations take account of local people's perspectives and allow them to participate from the very beginning of the decision process, the participation in the latter decision process (such as *application*) would go more fluidly with little resistance.

While recognizing the importance of the power sharing by a leading organization, what does it mean for local residents? Members of the Women's Committee emphasized that every participant worked 'at the same table' and there was 'no leader' of the committee. Such feeling that they were treated *equally* may have further inspired their motivation in policy process. As "local communities often do not buy into project goals, accept strategies, or feel that they possess any power to influence project outcomes (Wilshusen 2000:290)", it is understandable that local people do not have any motivation for the program implementation if they feel they are ordered to do so. Placing local residents at the center stage of decision making gives a psychological effect in that they feel respected as major actors; in other words, they are part of the process. By being involved from the beginning, participants understand the necessity of the policy, and become cooperative in the entire program, feeling their responsibility. Thus, such psychological change will give them an incentive, especially those such as local residents and women who usually felt alienated from important decision making.

Providing incentives is often discussed as a means for implementing an environmental policy. The Minamata-city policies were successful due to two important incentives: a citizens' pride that they are contributing to environmental conservation and 'sense of responsibility,' although the other incentives such as economic advantages helped. If stakeholders recognize that solving a given problem is for their own well-being, they naturally motivate themselves to resolve the problem. The incentive to act can be enhanced by power sharing by leading organizations as well as participation of stakeholders in the early stages of the decision process. By being involved from the beginning, stakeholders develop a 'sense of responsibility' because they are

well-informed of the problem situation and the importance of the policy. If an initial sense of responsibility is not developed, leading organizations may need to provide alternative incentives, such as economic incentives, or require citizens to participate in the implementation phase.

Leadership

Through the case study, I observed how individual participants had great influence on the outcome. In each case study, key people led the projects: the ex-mayor in rejuvenating society through the city administration, the Section Head of Environment Section in Women's Committee project, and the Recycling Program Coordinator in the Recycling Program. Each showed strong leadership as well as their enthusiasm and generosity. Without them, the policy outcome may have been quite different.

Also, examining how each interviewee got involved in the process, I found that behind the individual who influenced the policy process, there was another individual who provided enlightenment. For example, the ex-mayor first got involved in solving Minamata-disease problem through the encouragement of a staff member of the Kumamoto-prefecture government, who was in charge of the issue (ex-mayor, personal communication.12/25/2005). Furthermore, it was the ex-mayor, who appointed the Section Head in the position to lead environmental projects including the Women's Committee project, recognizing his talent (vice chief, Environmental Planning Office, personal communication. 12/12/2005). The power of one may be strong enough to influence the outcome of a policy process. A staff member of a municipal body said, "Any policy will succeed if there is at least one who really tries to accomplish it (city official, Kamikatsu-cho town, personal communication. 01/05/2006)", especially one who is in an authoritative position. Some members of Women's Committee agreed that the success of a program highly depends on the individual city official in charge of the secretariat at that time – how seriously and enthusiastically they work. Thus, the quality of a leader is important in that it is their point of view that determines the direction of the policy process. The conduct of the three

key people and their points of view as leader, which may have contributed to the successes in the case, are summarized below:

- taking whole the responsibility on their shoulders
- leaving initiatives to their subordinates or collaborators to increase their motivation
- getting everybody involved
- making efforts to establish a collaborative/trusting relationship among participants
- suggesting collaboration (or offering incentives) to making their collaborators act instead of ordering by force

These characteristics tell that the leader is not the person who decides every detail but is one who makes good use of his or her collaborators, similar to power sharing by a leading organization. While the strong leadership can be an important successful factor in the policy process, it depends on how the leader is willing to share power, involving a variety of participants.

Demographic Features

Some may argue that the high citizen involvement in the Recycling Program was accomplished because of the small size of Minamta-city. However, Platt et al. (1991) suggested, it is not impossible to adopt the policy process concepts such as clarifying problems and goals, citizens' involvement in decision process, and face-to-face discussion among participants at a larger scale. Also, Folz (1991a; 1991b; 1999) found that population size had less influence on the outcome of community's recycling efforts. The most important thing is that the stakeholders completely understand the importance of the policy as demonstrated in the Minamata-city case. To gain that understanding, there must be face-to-face communication between the decision maker and participants, especially those who will be the major actors in implementation. How can

one make as many as local residents to attend to discussion meeting in larger municipalities? It would need more city staff, however, the larger a municipality, the more staff is available. Also, as the Women's Committee project, the city government as a leading organization can call for citizen groups as a representative of local residents, or create a new citizen committee to design the project and lead the rest of the citizens. It takes time to get citizens involved in the decision process, but it is mandatory for the successful long-term implementation of a program.

Others: Key Features in MSW Management Program

Mandatory with Incentives

Some studies on community recycling efforts showed that mandatory programs appeared more effective than voluntary ones (Folz 1991a; 1991b; 1999; Platt. et al. 1991), especially programs with sanctions and penalties for improper separation (Folz 1999b). However, Folz (1999) found a negative effect of such sanctions and penalties on citizens' participation. The Recycling Program of Minamata-city was mandatory with no sanctions or penalties but other incentives such as: 1) altruism that they are contributing to the environmental conservation; 2) pride and respect from other cities; 3) a means of communication between residents, which may be unique to Minamata-city; and 4) financial benefit. As some study showed, altruism is a strong incentive for recycling program (e.g., Ackerman 1996; Folz 1991b). In Minamata-city, similar to Dover (NH)'s case (EPA 2006b),” appreciation from others can be an incentive in that they gained *respect*, one of the eight base values (see Chapter III for more explanation). As Platt et al. (1991) and the Dover's case (EPA 2006b) suggested, 'economic incentives' such as PAYT (see Chapter III) can be strong factors. Also in Minamata-city, the profit gained through selling recycled materials further encourages citizens. In addition, instead of “voluntary block leaders” as Folz (1999) suggested for effective voluntary programs, the city government officially established the Recycling Committee for managing the recycling program, and that led to the long-term

continuity of the program. It gave citizens the sense of responsibility and pride in that they control the program. Thus, placing a responsible person (from among local residents) who will lead and manage a program will help the program function smoothly.

In conclusion, in community recycling efforts, mandatory programs with incentives are more effective, and leaving initiatives to citizens in program operation will further support the program in long-term.

Near-term and Challenging Program Goals

As Folz (1999) found that establishing clear, challenging, and near-term goals worked better than the later, ambiguous goals in voluntary programs, 'quickness' was a common characteristic in Minamata-city case study. Each policy was promptly initiated and implemented in a timely fashion. In the Recycling Program, the Task Force completed the investigation report within half a year, and the program was firmly implemented within a year. In the Food-containers Abolition Project, the official agreements were implemented within one to two years. Participants in each process recalled that the projects had great momentum.

A near-term goal may constitute a more salient appeal to citizen altruism (Folz 1999). The motivation of participants remains high because a near-term goal is easy to realize and they can feel a sense of accomplishment. Also, if the program prolonged, original participants (especially leading persons) who clarified the problem and set the goal might be replaced by successors. It is difficult to have the same enthusiasm for the successors as their predecessors. Lack of funding support may also happen. Certain organizations such as governmental bodies often reconfigure the organizational structure. Therefore, policies must be done before momentum fades.

As Folz suggested, a challenging goal may have inspired participants. The Recycling Program with multiple source separations was a sensational and unusual measure at that time in Japan. The Women's Committee suggested removing containers for 97 food items in four

supermarkets. Such challenging goals may further encourage the implementation actors because they can see significant change.

Multiple, Collaborative Methods

Minamata-city achieved the goal of waste reduction through consecutive measures: Women's Committee worked to reduce waste generation at the source, and the Recycling Program reduced waste going into landfill as well as recovering resource materials. The city government also took effective measures to reduce plastic waste in collaborative work with the Women's Committee's Food-container Abolition Project, adding plastic waste into recycling materials, which inspired supermarkets to spontaneously reduce plastic (styrofoam) food-containers because consumers avoided buying plastic containers. As Dover (NH)'s case (EPA 2006b) and Denmark's national policies (Anderson 1998) showed, as well as Minamata-city's case study, multiple and collaborative methods must be established from a comprehensive standpoint to accomplish an integrated policy goal of waste reduction.

Effort of Local Officials

As Minamata-city case showed, outreach efforts by the city government was a huge factor of successful policies in MSW management, which was what Folz (1991a; 1991b; 1999) suggested as one of the factors for successful recycling program. Bearing more responsibility for the program (along with increased time commitment), their motivation would increase and create more favorable results. As Folz's (1991a; 1991b; 1999) study found that full-time recycling coordinators or program managers rather than part-time staff had more favorable results, some of the members of Women's Committee pointed out that frequent changes in city officials in charge of the secretariat affected the progress of the program. One or more persons who consistently work from the beginning to the end of a program, especially in leading organization, are needed.

Citizen involvement in decision process

Both focused policies of Minamata-city case study and Folz (1991a; 1991b; 1999) showed that citizen participation is a key factor for a successful decision process, especially in the implementation phase. Citizens must be involved at the early stages of the decision making process, and the process should be conducted in an open and democratic way.

Convenience vs. Customs?

Some studies suggested 'convenience' as a factor of successful recycling program (e.g., Folz 1999; Platt et al. 1991). However, thinking of the overflow of waste coming from the concept of 'convenience,' does it meet to the goal of waste reduction? Enhancing convenience does not encourage people not to create waste, and may even increase the amount, providing people a feeling that they are doing good as Germany's national policy revealed (Chapter II). Convenience may lose the true objective of the program to reduce waste if it is just promoting a higher recycling rate. Because of convenient recycling, people may not want to 'reduce waste.' Such a life style would cause "mass-production, mass-consumption, and *mass-recycling* instead of mass-disposal (Yoshida 2004)." As I argued in Chapter II, the goal in municipal solid waste should be real waste reduction at the source. In this sense, recycling is a means to an end but not a goal by itself. Even if a community accomplished a high recycling rate, it does not necessarily mean that the community has reduced impacts on natural resources. Therefore, if the ultimate goal is not waste reduction, recycling programs will not lead to a fundamental solution. Therefore, reviewing the *actual* goal of a recycling program must be important when the problem is being defined.

Minamata-city stands in contract to the concept of 'convenience' by handling the Recycling Program with citizens' hands, emphasizing humanization. It even positively accepted "inconvenience" in the city policies with the view that many environmental problems including waste occur because people have been seeking "convenience." To help the Recycling Program

with inconvenience, the city government made special efforts – the city officials were exempt from the office on the day of the recycling program in their region to encourage the city staff as model citizens. Also, elementary and junior high school students who have to join the program as a mandatory duty prior to their after-school activities. As Minamata-city's Recycling Program suggested, "customizing" a program can be the countermeasure to "convenience" – if it become a daily "custom," people will not feel annoyance and inconvenience.

The answer to the question: "Can those factors in policy making process be adapted to a different context?" is provided in the Conclusion.

Conclusion

As human beings became civilized and society developed economically and technologically, the concept of waste formed, and the features of waste developed. Waste-relevant problems have grown as the consumption patterns enlarge in more unsustainable ways, especially in industrialized countries.

Municipal solid waste (MSW) is the one problem that characterizes our consumer society, where many still valuable materials are subjectively categorized as waste. The problem situation surrounding MSW is serious especially in developed countries, whose excessive consumption patterns also affect poor countries in terms of environment, human health, and economy. While technological waste (such as hazardous waste) can be regulated by laws, it is difficult to control individuals who cause MSW. Since MSW problems can be considered as a social problem, establishment of appropriate policies may help to solve the problem by changing individuals' behavior. While national level laws and regulations function as a broad framework, municipal level actions are more important for tackling the MSW problem, directly involving individuals in the policy process.

In Japan, as well as the other developed countries, ever increasing MSW has become a national-level problem due to limited dumping space and dioxin problems. When national MSW

policies have not appeared effective, some municipalities began their own efforts to reduce MSW. Minamata-city is the one municipality that successfully established desirable MSW management policies city under the concept of environmental protection and the rejuvenation of the society based on its tragic experience of Minamata-disease.

According to the objective of this research to find the way how to improve the policy process in solving MSW problems, I identified the key factors obtained through the assessment of the two focused MSW policies of Minamata-city case study: a Recycling Program; and the Food-containers Abolition Project of the Women's Committee. Among them, the following can be generalized as factors in an effective policy process establishment: 1) level of crisis; 2) environmental consciousness; 3) key participants; 4) problem orientation, goal clarification; 5) face-to-face discussion; and 6) power sharing.

As a policy background, level of crisis for a given issue is an important factor which urges stakeholders to take action and accept an alternative policy. Raising the environmental consciousness in a community will also help when establishing a new environmental policy. Although the seriousness of an environmental problem is often not recognized among stakeholders, it can be developed by continuous efforts of grassroots activities such as holding public meetings and open forums, and environmental education in schools. The media can be used to widely communicate information.

Different perspectives of participants tend to cause value conflicts and hinder communications, which then hamper collaboration in the entire policy process. All the stakeholders who are interested in a given issue or those who are affected by a policy outcome must participate to understand the issue and share the values between participants. Those who are going to implement the policy must be involved so that their perspectives are equally reflected in the decision. Among stakeholders, citizens' participation must be especially emphasized because they are often major actors in policy implementation phase. As for MSW problems, the citizens are important in that they are the root cause of MSW generation. The level of citizen participation

can be improved by the efforts of a leading organization throughout the policy process. Governments' intervention is inevitable as an authoritative body who can authorize and enforce rules, as a power body to encourage the other stakeholders' participation, and as a leading organization, especially in MSW management. Since information is a power, the media plays important role, too.

What features are important in conducting a decision process? Problem orientation with goal clarification is an important first step. In setting the goal, social aspects (different perspectives of various participants) must be integrated in any environmental problem solving since environmental problems are also social problems. One of the most important elements in decision process is to have an open, face-to-face discussion among participants, involving all the stakeholders. The purpose is to gain understanding of each participant's perspective and also about a given issue with information shared. The benefit of this is to prevent conflicts and to create a trusting and cooperative relationship between participant groups. Distrust of the leading organizations by participants often leads to their reluctance to cooperate in the later implementation stage. Power sharing by the leading organization is a key to successful participation in decision process, making efforts to involve all the stakeholders as equal partners and leaving the initiatives to the collaborators to raise their motivation and creativity. Such psychological effects are important to gain the participants' cooperation. In addition, successful program features specifically in MSW management include: mandatory program with positive incentives (e.g., altruism, sense of ownership) and economic incentives; clear, challenging, and near-term goal (to inspire and keep participants' motivation high); full-time program coordinators; program operation, leaving incentives to citizens. I believe those factors drawn from the Minamata-city case study can be applied to different contexts (such as in culture, demography, and geography) and to solving many environmental problems. While each of the six factors is a necessary element, the *most* important factors for a successful policy process in MSW management are: participation of all the stakeholders; face-to-face discussion; and power sharing

by leading organizations in the decision process.

Although the policy process of the two focused policies in Minamata-city can be regarded as a successful case, there is still some room for improvement. The Women's Committee can take whole initiatives instead of placing the secretariat in the city government so that the governmental institutional change does not affect their project process. In addition, although it was only in Minamata-city case study, establishing common principles is helpful in carrying out decision process, which avoids conflict among participants and determines the direction of the process. Also, the second policy resulted in success which can be, in part, attributed to the remarkable success of the first policy. Thus, to make an example of success in environmental policy in the region and citizen participation into city administration as a foundation will help the policy establishment.

In addition, Minamata-city provides important lessons based on its experience with one of the most serious industrial pollutions in Japanese history. It showed how environmental destruction can destroy a whole society for the long term, destroying physical and mental health, economy, and the relationships among people. Also, it changed my view from focusing on waste only as an independent issue, teaching me that every environmental problem is connected to others, true as well to various human activities. Thus, comprehensive understanding and approaches are required for the resolution of environmental problems.

BIBLIOGRAPHY

- Ackerman, F. (1996). *Why Do We Recycle?* Island Press. Washington, D.C.
- Agamuthu, P and Faizura, P. N. (2005). "Biodegradability of degradable plastic waste." *Waste Management and Research* 2005:23:95-100, UK.
- Anderson, M. S. (1998). "Assessing the Effectiveness of Denmark's Waste Tax." *Environment* May 1998.
- Becker, M. L. (1993). "The International Joint Commission and Public Participation: Past Experiences, Present Challenges, Future Tasks." *Natural Resources Journal* 33: 235-274.
- _____. (2006). *Top Story*. Basal Action Network – BAN. <<http://www.ban.org/index.html>> (08/11/2006)
- _____. (2005). "Interstate Dumping of Trash Continues to be Major Solid Waste Practice." *BioCycle* August 2005.
- _____. (2006). *Waste Management*. Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit – BMU (Federal Ministry for the Environment, Natural Conservation and Nuclear Safety). January 2006. <http://www.bmu.de/english/waste_management/general_information/doc/4304.php> (06/12/2006)
- _____. (1988). *Waste: Choices for Communities*. Edited by Boyd, Burks, and McGrath. Concern Inc.
- _____. (2005). *CIA – The World Fact Book*. <<http://www.cia.gov/cia/publications/factbook/index.html>> (06/30/2006)
- _____. (Jun/2001a). "Ohshu Haikibutsu Gyosei No Genjo To Kadai 1 (European Waste Management Status and Challenge No.1)." *Jichitai Kokusaika Forum (Local Authorities International Forum)*. Council of Local Authorities for International Relations – CLAIR. 2003. <<http://www.clair.or.jp/j/forum/forum/tyosa/139/INDEX.HTM>> (06/18/2006)
- _____. (Jun/2001b). "Ohshu Haikibutsu Gyosei No Genjo To Kadai 2 (European Waste Management Status and Challenge No.2)." *Jichitai Kokusaika Forum (Local Authorities International Forum)*. CLAIR. 2003. <<http://www.clair.or.jp/j/forum/forum/tyosa/140/INDEX.HTM>> (06/18/2006)
- _____. (Aug/2001). "Ohshu Haikibutsu Gyosei No Genjo To Kadai 4 (European Waste Management Status and Challenge No.4)." *Jichitai Kokusaika Forum (Local Authorities International Forum)*. CLAIR. 2003. <<http://www.clair.or.jp/j/forum/forum/tyosa/142/INDEX.HTM>> (06/18/2006)
- _____. (Sep/2001). "Ohshu Haikibutsu Gyosei No Genjo To Kadai 5 (European Waste Management Status and Challenge No.5)." *Jichitai Kokusaika Forum (Local Authorities International Forum)*. CLAIR. 2003. <<http://www.clair.or.jp/j/forum/forum/tyosa/143/INDEX.HTM>> (06/18/2006)

- Clark, T. W. (2002). *The Policy Process: A Practical Guide for Natural Resources Professionals*. Yale University.
- Clark, T. W. et al. (2000). *Foundations of Natural Resources Policy and Management*. Yale University.
- Drackner, M. (2005). "What is waste? To whom? – An anthropological perspective on garbage." *Waste Management & Research* 2005: 23:175-181. UK.
- Danish Environmental Protection Agency – Danish EPA. (2004). "Waste Strategy 2005-08: 3. Initiatives." *Waste and Recycling*. June 2004.
<http://www.mst.dk/homepage/default.asp?Sub=http://www.mst.dk/udgiv/Publications/2004/87-7614-249-3/html/kap03_eng.htm> (05/20/2006)
- Danish EPA. (2005a). "Environmental Review no. 4/2005. Waste Statistics 2003: 5. Individual waste sources and status in relation to targets for 2008." *Waste and Recycling*. April 2005.
<<http://www.mst.dk/homepage/>> (05/20/2006)
- Danish EPA. (2005b) "Waste Statistics 2003: 1.5 Developments in waste generation 1994-2003." *Waste and Recycling*. April 2005. <<http://www.mst.dk/homepage/>> (05/20/2006)
- _____. (2001). *Waste – Indicators: Waste generation from household and commercial activities 2001*. European Environmental Agency – EEA.
<http://themes.eea.europa.eu/Environmental_issues/waste/indicators/household_waste/index.html> (04/23/2005)
- _____. (2004). *EEA Signals 2004* (pp14-15).
<http://reports.eea.europa.eu/signals-2004/en/tab_content_RLR> (06/09/2006)
- _____. (2005a). "Country Analysis." *The European environment - State and outlook 2005* (pp316-319). EEA.
<http://reports.eea.europa.eu/state_of_environment_report_2005_1/en/tab_content_RLR> (05/31/2006)
- _____. (2005b). "The European environment - State and outlook 2005." *State of Environment Report No 1/2005*. EEA.
<http://reports.eea.europa.eu/state_of_environment_report_2005_1/en/index.html> (08/12/2006)
- Elwell, C. M. (2000). "Analysis of the Proposed Pumped-Storage Hydroelectric Power Projects, Sequatchie Valley, Tennessee." in Clark, T.W. et al. *Foundations of Natural Resources Policy and Management*. New Heaven and London: Yale University.
- _____. (1998). "Reduce, recycle, and reuse." *Environment* 1998: 40 (4):24.
- _____. (2006a). *Municipal Solid Waste – Basic Facts*. Environmental Protection Agency – EPA. <<http://www.epa.gov/msw/facts.htm>> (07/24/2006)
- _____. (2006b). *EPA – Pay As You Throw – Dover, NH*.
<<http://www.epa.gov/payt/tools/ssdover.htm>> (05/20/2006)

- _____. (2004). *Municipal Waste*. European Topic Centre on Resource and Waste Management – ETC. May 2004. <<http://waste.eionet.europa.eu/waste/1>> (04/23/2005)
- _____. (2006a). *Waste*. ETC. June 2006. <<http://waste.eionet.europa.eu/definitions/waste>> (06/20/2006)
- _____. (2006b). *Waste Quantities By Countries*. ETC. June 2006. <<http://waste.eionet.europa.eu/wastebase/quantities>> (07/02/2006)
- _____. (2005). *Waste Management – Packaging and packaging waste*. EUROPA. May 2005. <<http://europa.eu/scadplus/leg/en/lvb/l21207.htm>> (08/10/2006)
- _____. (2006). *Environment-Waste*. EUROPA. June 2006. <<http://ec.europa.eu/environment/waste/>> (06/23/2006)
- Flavin et al. (2004). *State of The World: A Worldwatch Institute Report on Progress toward a Sustainable Society*. Worldwatch Institute.
- Flores, A. (2000). "Protecting Human Health from Ozone Pollution in Baltimore, Maryland: Revising the Current Policy." in Clark, T.W. et al. *Foundations of Natural Resources Policy and Management*. New Heaven and London: Yale University.
- Folz, H. D. (1991a). "Recycling Program Design, Management, and Participation: A National Survey of Municipal Experience." *Public Administration Review* 51(3):222-231.
- Folz, H. D. (1991b). "Public Participation and Recycling Performance: Explaining Program Success." *Public Administration Review* 51(6):526-532.
- Folz, H. D. (1999). "Municipal Recycling Performance: A Public Sector Environmental Success." *Public Administration Review* 59(4):336-345.
- Garen, E. J. (2000). "Appraising Ecotourism in Conserving Biodiversity." in Clark, T.W. et al. *Foundations of Natural Resources Policy and Management*. New Heaven and London: Yale University.
- Haikibutsu Taisaku Teshima Juminkaigi (Teshima Waste Management Citizen Conference). (2003). "Teshima Jiken Toha (What is Teshima Case?)." <<http://www.teshima.ne.jp/blog-archives/000001.html>> (06/22/2006)
- Hjelmar, O. (1996). "Waste Management in Denmark." *Waste Management* 16 (5/6):389-394. Great Britain: Elsevier Science Ltd.
- _____. (2006). *Illegal exports of waste from Germany to Czech Republic*. International Solid Waste Association – ISWA. March 2006. <<http://www.iswa.org/index.php?option=content&task=view&id=277&Itemid%20=27>> (08/03/2006)

- Kankyosho (Japanese Environmental Ministry). (2000). "Dai-2-show Dai-2-setsu. Kojin No Seikatsu Ga Motarasu Kankyo Fuka (Chapter Two, Section Two. Burdens on the Environment by Individuals)." *Heisei 12 Nenban Zudemiru Kankyo Hakusho (Environment White Paper in Diagram)*.
<<http://www.env.go.jp/policy/hakusyo/zu/eav29/eav290000000000.html>> (08/06/2006)
- Kankyosho. (2005a). "Joshou 1-2. Gomi No Haishutu Shori No Genjo (Introduction 1-2. Waste Disposal Status)." *Heisei 17 Nenban Junkangata Shakai Hakusho (White Paper on Recycling-based Society 2005)*.
<http://www.env.go.jp/policy/hakusyo/junkan/h17/html/jh0501000100.html#3_1_1_2> (08/03/2006)
- _____. (2005b). "Ippan Haikibutsu no Shori Jokyo Nado (Heisei 15 Nendo Jisseki) Nitsuite (Status of general waste disposal amount and treatment for 2003)." *Environmental Ministry Press Information*. Kankyosho. November 2005.
<<http://www.env.go.jp/press/press.php?serial=6512>> (06/03/2006)
- _____. (2006). "Haikibutsu No Shori Oyobi Seisou Ni Kansuru Houritsu (Waste Disposal and Sanitation Law)." Kankyosho. June 2006.
<<http://law.e-gov.go.jp/htmldata/S45/S45HO137.html>> (08/22/2006)
- _____. (n.d.a). "Haikibutsu No Kubun (Waste Classification)." *Gomino Hanashi (Waste Story)*. Kankyosho.
<http://www.env.go.jp/recycle/kosei_press/h000404a/c000404a/c000404a-2.html> (02/22/2005)
- _____. (n.d.b). "Ippan Haikibutsu No Haishutsuryo No Doko (Trend of General Waste Generation)." *Gomino Hanashi (Waste Story)*. Kankyosho.
<http://www.env.go.jp/recycle/kosei_press/h000404a/c000404a/c000404a-3.html> (02/22/2005)
- _____. (n.d.c). *Kankyo Tokeishu – Ippan Haikibutsu 3.4 Gomi Haishutsu No Suii (Environment Statistics – General Waste 3.4 Waste Generation Transition)*. Kankyosho.
<<http://www.env.go.jp/doc/toukei/contents/index.html>> (02/22/2005)
- _____. (n.d.) "Nihon No Kankyo Shuto Contest (Environmental City Contest in Japan)." *Kankyo Shimin (Environmental Citizen)*.
<<http://www.kankyoshimin.org/jp/mission/ecocity/ecocap/index.html>> (08/22/2006)
- Kaczka, D. (2000). "Use of Turtle Excluder Devices to Save Sea Turtles Around the World." in Clark, T.W. et al. *Foundations of Natural Resources Policy and Management*. New Heaven and London: Yale University.
- Kojirin* 6th ed. (1983). Sanseido Co., Ltd.
- Lawrence, J. (2000). "Improving the Policy Process for the Restoration of Beaver Ponds Park, New Haven, Connecticut." in Clark, T.W. et al. *Foundations of Natural Resources Policy and Management*. New Heaven and London: Yale University.

- Liberknecht, K. (2000). "How Everything Becomes Bigger in Texas: The Barton Springs Salamander Controversy." in Clark, T.W. et al. *Foundations of Natural Resources Policy and Management*. New Heaven and London: Yale University.
- Louis, G. E. (2004). "A historical context of municipal solid waste management in the United States." *Waste Management & Research* 2004: 22:306-322. UK.
- Marashlian, N. and. El-Fadel, M. (2005). "The effect of food waste disposers on municipal waste and wastewater management." *Waste Management and Research*. 2005.23:20-31. UK.
- Melosi, M. V. (2005). *Garbage in the Cities: Refuse, Reform, and the Environment*. University of Pittsburgh Press.
- Miller, G. T. (2004). *Environmental Science* 10th ed. Canada: Thomson Learning, Inc. CA: Brooks/Cole-Thomson Learning.
- Minamata-city. (n.d.a). *Recycle Kara Kankyo Model Toshi Eh (The Path From The Recycling Program To The Model Environmental Friendly City)*.
- _____. (1992). *Waste Management Task Force Final Report*. Waste Management Task Force, Minamata-city.
- _____. (2004). *Minamata-city Waste Report 2004*. Environmental Clean Center, Minamata-city.
- _____. (2005). *Minamata-byo To Watashitachi (Minamata-disease And Us)*. Minamata-disease Museum.
- _____. (n.d.b). *Minamata-shi No 22 Bunbetsu Shushu (22 Types of Waste Source Separations in Minamata-city)*. Minamata-city.
- _____. (n.d.c). *Gomi Genryo Josei Kaigi No Ayumi (The Road of Women's Committee on Waste Reduction)*. Environmental Planning Office, Minamata-city.
- Ori, A. (2002). "Moyainaoshi Wo Kensho Suru – Gomi Genryo (The Review of Moyainaoshi – Waste Reduction)." (possibly unpublished)
- Orr, D. (2002). *The Nature of Design*. Oxford, NY: Oxford University Press.
- Platt, B. et al. (1991). *Beyond 40 percent*. Island Press.
- Sakai, S. et al. (1996). "National Overview: World Trends in Municipal Solid Waste Management." *Waste Management* 16 (5/6). Great Britain: Elsevier Science Ltd.
- Sakai, S. (1996). "Municipal Solid Waste Management in Japan." *Waste Management*. 16 (5/6):395-405. Great Britain: Elsevier Science Ltd.
- Sakamoto, M. (n.d.a). *Shokuhin Toray Haishi Undow Ni Tsuite (Food-containers Abolition Project)*". (possibly unpublished).

- Sakamoto, M. (n.d.b). *Chiiki Jumin Niyoru Recycle Katsudouheno Torikumi*. (possibly unpublished).
- Schreurs, M. A. (n.d.) (Associate Professor of Department of Government and Politics, University of Maryland). *The Development of Cyclical Societies and Environmental Governance in the United States, Germany, and Japan*. (possibly published).
- Seki, Y. (2000). "Jirei 4: Kankyo Model Toshi Zukuri (Creation of the Model Environment-friendly City)." *Newsletter Vol. 7. November 2000 – Minamata-shi. 20% Club for Sustainable Choice*.
 <http://www.shonan.ne.jp/~gef20/J/meeting2000_minamata.html> (08/22/2006)
- Shindo, T. (2002). *Naraku No Butai Mawashi – Yoshii Masazumi Kikigaki (Management of the stage in Abyss – Narrative Recording of Masazumi Yoshii)*. Fukuoka, Japan: Nishinihon Shinbunsha.
- Tchobanoglous et al. (1993). *Integrated Solid Waste Management*. McGraw-Hill, Inc.
- _____. (2006). *Tokorozawa Dioxin Houkoku (A Dioxin Report From Tokorozawa. Saitama Seibu - Ttsuchi To Mizu To Kuuki Wo Mamoru Kai (Group for Improvement of the Environment of Nakaarai District of Tokorozawa)*. July 2006.
 <<http://www3.airnet.ne.jp/dioxin/index.html>> (08/01/2006)
- _____. (1996). "Growing Heaps of Garbage in the Cities." *Taking Action Chapter 8: Waste*. United Nations Development Programme – UNDP.
 <<http://www.nyo.unep.org/action/08.htm>> (09/12/2005)
- _____. (2004). "Chapter 4: Changing Consumption Pattern." *Agenda 21*. United Nations Division for Sustainable Development – UNDSO. December 2004.
 <<http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter4.htm>> (09/12/2005)
- United Nations Environmental Programme – UNEP. (2002). *Global Environmental Outlook 3*.
- UNEP. (2006). *Global Environmental Outlook: GEO Data Portal*. November 2006.
 <<http://geodata.grid.unep.ch/>> (08/05/2006)
- _____. (2001). *About Us*. UNEP Sustainable Consumption (SC) Programme. January 2005. <<http://www.unep.org/pc/sustain/about-us/about-us.htm>> (07/26/2006)
- _____. (n.d.). *Meeting the Global Waste Challenge*. UNEP Secretariat of the Basel Convention. <<http://www.basel.int/index.html>> (04/23/2005)
- Vehlow, J. (1996). "Municipal Solid Waste Management in Germany." *Waste Management* 16(5/6):367-374. Great Britain: Elsevier Science Ltd.
- Wilshusen, P. R. (2000). "Local Participation in Conservation and Development Projects: Ends, Means, and Power Dynamics." in Clark, T.W. et al. *Foundations of Natural Resources Policy and Management*. New Haven and London: Yale University.

_____. (2004). "State of the World 2004: Consumption by the Numbers." *Worldwatch*.
January 2004. <<http://www.worldwatch.org/press/news/2004/01/07>> (09/12/2004)

Yamaya, S. (2000). *Haikibutsu To Recycle No Kokyo Seisaku (Public Policies in Waste Management and Recycling)*. Chuo Keizaisha.

Yin, R. K. (2003). *Case Study Research: Design and Methods Third Edition*. SAGE Publications.

Yoshida, F. (2004). *Junkangata Shakai (Cyclical Society)*. Chuko Shinsho.

Yoshii, M. and Joko, A. (2004). *Taidan – Kigatsuitara Top Runner (Dialogue – Suddenly, The Top Runner)*. Tokyo, Japan: Sanyo Shuppansha.

APPENDICES

APPENDIX A: WRITTEN CONSENT FORM

Title: How Can We Improve Municipal Solid Waste Policy In Terms of Over-Consumption?

To Participants in this Study:

My name is Rika Ikemoto, a graduate student in the Environmental Conservation Program of Natural Resources Department at University of New Hampshire, Durham, NH in USA. I am conducting a study on the policy process related to waste management as part of my graduate program in Environmental Policy. The purpose of this study is to explore what factors contributed to the successful policy process in waste management in the selected sites and how they can be applied to different contexts.

I am interviewing local people who were working on the process to solve waste management problems. Such people include the leaders and staffs of municipal government, citizens, members of local citizens' group, and related companies. I am asking questions about the background and process of the policy projects, the outcome and effects of the policies, and perspectives of the participants. This interview is expected to take 30 – 40 minutes in person. A telephone interview is an alternative. I will take notes and record an interview with a tape recorder with permission of the interviewee; the tapes will be kept by me with interviewees' permission for my data analysis afterwards and to present as data sources upon requests by other researchers in the future. I will request interviewees a permission of citing their name in my thesis. I will also ask interviewees for permission to contact them after the interview to review and confirm the contents of the interview. The privacy of interviewees will be protected. Interviewees can end the interview anytime.

My contact information and that of my academic advisor is provided below should you have further questions about their rights as a research subject; you may also contact Julie Simpson in the UNH Office of Sponsored Research at 603-862-2003 or julie.simpson@unh.edu to discuss them.

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I have read the above statement and agree to participate as an interviewee under the conditions stated above. I am aware I can discontinue participation at any time without penalty.

Signature of participant

Date

I agree with the use of audiotape recorder and keep the tapes under the condition that I may request that it be turned off at any time during the interview.

Signature of participant

Date

I agree with that I will response when the researcher wants to contact me to review the contents of interview afterwards.

Signature of participant

Date

インフォームド・コンセント (インタビューに当たっての同意書)

議 題: 一般廃棄物問題に対する政策の改善を提言する。

~大量消費社会という観点から~

同研究に関わる方へ

私は、米国のニューハンプシャー大学、自然資源学部の環境保護プログラム(大学院)に所属致します池元里香(いけもと りか)と申します。このたび、専攻である環境政策の修士論文プロジェクトとして「廃棄物管理に関する政策」を研究することになりました。この研究の目的は、研究対象となる自治体の廃棄物管理政策においてどのような要因がその政策を成功に導いたかを探求し、その要因が異なる状況(異なる自治体、国など)においても適用されるかどうかを評価・判断することです。

そのデータ集めの一環として、廃棄物管理に関する政策に携わられた地元の方々にインタビューをさせていただきたくお願い申し上げます。その方々には、地方自治政府(市役所または町役場)の市長および町長、職員、住民、市民団体のメンバー、関連する企業などを含みます。インタビューでは、研究対象となる政策の背景、過程、結果及び効果、また参加関係者の視点を伺います。このインタビューには30分から40分かかることが想定されます。直接面談が叶わなかった場合の代理策として、電話でのインタビューも考慮されます。インタビューの間、ノートを取り、また面接を受けていただく方の同意のもとでインタビューを録音させていただき、データの分析と将来データ元の証拠を証明しなくてはならなくなった場合に備えて録音テープを保管いたします。私の修士論文において被面接者の氏名を引用させていただく場合には、採用者から許可をいただきます。また後日、インタビューの内容を確認するため被面接者に連絡をとる場合にも事前に許可をいただきます。被面接者のプライバシーは固く保護されます。インタビューは、被面接者の要望によりいつでも中断することができます。

被面接者は、彼ら自身の研究対象者としての権利に関して質問がある場合にはいつでも私および私の学業アドバイザー、もしくは UNH リサーチ支援室のジュリー・シンブソン氏に連絡を取ることができます。連絡先は下記の通りです。

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参加者の署名

_____/_____/_____
日付

私は、インタビュー中に私が望む場合はいつでも録音を中止できるという条件のもとに、研究者のテープレコーダーの使用に同意し、研究者のデータ分析とデータ元の証拠として使用する場合に限り録音テープの保管に同意いたします。

参加者の署名

_____/_____/_____
日付

私は、後日研究者がインタビューの内容の再確認のため連絡を取りたい場合には応じることに同意いたします。

参加者の署名

_____/_____/_____
日付

APPENDIX B: FOCUSED INTERVIEW FORM

Title: How Can We Improve Municipal Solid Waste Policy In Terms of Over-Consumption?

Interviewer: RIKA IKEMOTO

Date: ____ / ____ / ____ Time: _____

Place: _____

I. Interviewee (participants) Information

Name: _____ Sex: M F

Title: _____ Dept. _____

Institution: _____

Address: _____

Phone: _____ Fax: _____

E-mail: _____

II. Waste-relevant problems of concern from your perspective

1. How did you define the waste-relevant problem in your community which triggered the effort to develop new policy?
2. When do you think did the problem begin to appear or people began aware of the problem?
3. What first got your attention and how (form news, daily life, etc.)?
4. In your perspective, how serious the problem was when the effort to address it began?
 - Did you directly suffer from the problem at that moment, or did you anticipate you would suffer in the future?
 - What matter did you concern most; or what things did you want to resolve?
 - Why did you concern this problem?
5. What did you assume or expect to happen if you did or did not take actions against to the problem?
6. Why do you think you had this problem in your community?
7. Why did people in your community have great concern with the problem?
8. Was the problem particular to your town/city or nationally general issues?
9. Do you think it is related to the history or characteristics of your community?

III. Your role and involvement in policy process

1. When did you first get involved and over what time period in the process of the problem solving?
2. How did you first get involved?
e.g., were you an individual participant, a professional in the field of problems, from a governmental, or a non-governmental organization?
3. What was your incentive to participate the problem-solving process?
4. If you are not an individual participant, could you describe your job or your role in your organization?
5. How actively were you involved; what activities, meetings or conferences did you join?
6. In what part of the decision-making process were you involved (audience of the public

meeting, discussion, create rules, implement rules, negotiations, etc.); did you have right to make final decisions?

7. What was your role in the process; in what way were you involved?
() meeting leader or organizer
() participant of the discussion
() others _____
8. Are you still involved in the process relevant to the problem, if so, in what ways?

IV. Policies and the Decision-making process

1. What was your ultimate goal in making policies; what exactly did you want to accomplish through the policies?
2. How did the set of policy-making process start?
 - When and by whom was it initiated; who first took action (citizens, citizens group, or governmental body)?
3. Did you think appropriate people participated in the decision-process, or did you want anyone else to participate; what about the ordinary citizen's participation other than citizen's groups?
4. What policies or efforts were made (regulation, events, campaign, etc)? Could you describe the history?
5. What strategies did you use to achieve the policy goal (negotiation, communication to the public, economic, etc), and what values did you have (skill, power, wealth etc.)?
6. How the decision was made? – were all participants' opinions fairly reflected? Were participants cooperative or in conflict?
7. Did you feel your opinion was fully reflected to the decision?
8. When you have conflicts in making decision, how did you resolve it; were there any person who facilitated?
9. Are there any obstacles to implement policies; were there any contradiction from citizens, governmental body, or industries?
10. When there was any contradiction to your decision, how did you resolve it?
11. What short-term outcomes and long-term effect did you get implementing the set of policies?
12. Do you think policies was effective according to your goal, if so, how?
13. What policies (activities, events) do you think most contributed to achieve your goal? Tell me in detail?
14. What do you think was hardest parts during the decision-making process and implementation of the policies?
15. Did the policies influence or change people's way of thinking and behavior or life style, if so, how?
16. Did you feel any change in the society or any institutions?
17. How do you evaluate the policy process (efforts)?
 - Did you satisfy the outcomes/effects of the policies?
 - How were their perspectives or demand reflected to the decisions?
 - Are there any things to be improved during the decision process?
18. If you feel successfully achieve the goal, what factors do you think most contributed it?
19. Do you think the same policies can be applied to another city/town?

V. Confirmation of facts in decision-making process

(These questions are only for person who lead the policy process)

1. Had any waste-relevant policy already existed when the problem occurred, if so, could you describe it?
2. How were the decisions made – unanimous or majority voting? Consensus??
3. Who participated to the final decision in each meeting or event?
4. How was the problem specified on the 'formal' agenda?
5. How was information gathered?
6. Were open debates held and how often?
7. How were the existing policies, if any, terminated?
8. How Have the efforts for reviewing and improving the policies been conducted?
9. When was the main policy developed?
10. Why and how did you terminate the set of the policy process? – was it ended by fulfilling original purpose or by a finance problem or political forces?
11. Were there any statistical change in waste amount; did it reduced damage from the waste-relevant problems?

APPENDIX C: RESEARCH QUESTIONS

Primary Research Question:

How can the policy-making process in municipal solid waste management be improved?

Supportive Research Questions:

1. MSW Problem Orientation

- 1-1. What is waste/MSW?
- 1-2. What is the problem of waste/MSW?
- 1-3. Why and how does it occur (root cause of waste)?
- 1-4. Who is in charge of it?
- 1-5. Is current way of waste management appropriate in terms of the environment?

2. Minamata-city Case Study

2-1. Specific MSW Problems in the Context

- 2-1-1. What are the specific MSW problems that triggered the new MSW policies?
- 2-1-2. How serious were they?
- 2-1-3. Which MSW policies most contributed to waste reduction in the city?
- 2-1-4. What is the goal of the policy?

2-2. Social/ Historical Background

- 2-2-1. What is the history of the city surrounding the MSW problem and the policy establishment?
- 2-2-2. Who are the stakeholders for the MSW problem and the new policies?

2-3. Decision Making Process

- 2-3-1. Who participated in the decision making process, and in what level?
- 2-3-2. How was each decision function of the policies conducted in light of the "standard" (Clark 2002:60)?
- 2-3-3. What outcomes and effects did the policies have?

2-4. Assessment of the focused policy processes

- 2-4-1. How did the social/historical context influence (connected to) the focused MSW policies establishment?
- 2-4-2. Which participant groups played an important role in the decision making process of the focused MSW policies?
- 2-4-3. Which decision functions were most emphasized for the success of the focused MSW policies?
- 2-4-4. Were the policy processes of the focused MSW policies perfectly sound according to my own **criteria** (see 4 as below for the criteria)?

3. What can be learned from the Minamata-city case study?

- 3-1. What factors led to the successful policy process establishment in MSW management in the Minamata-city case study?
- 3-2. Can those factors be applied to different contexts?
(To assess the factors, find similarities and differences, comparing with the other studies on policy process in natural resources conservation and community studies on waste management efforts)

4. Criteria for the assessment of the focused MSW policies in Minamata-city case study

- 4-1. Did the policies focus on reducing waste generation at the source rather than on the post-treatment of waste generated?
- 4-2. Did the policies take into account of the connection with entire environmental problems?
- 4-3. Were perspectives of all the participants (especially citizens) evenly reflected in the decision making?
- 4-4. Was the policy well accepted by every participant, especially the major actors of application before it is enforced? Were all the participants satisfied with the outcomes of the policy?
- 4-5. Did the policy have desirable outcomes and effects?
 - 4-3-1. Did the focused policies contribute to the waste reduction? (e.g., were there any statistical changes in amount of waste generation or recycling rate compared to before the policy started?)
 - 4-3-2. Were there any changes in citizens' behavior (or consumption patterns) to more environment-friendly way as a long-term result?

APPENDIX D: INTERVIEW TABULATION FOAM

A. Recycling Program

- A-1. ROLE: What was your role?
- A-2. BACKGROUND: What is the background? (leader and project members)
- A-3. GOAL: What was the ultimate goal? (leader and project members)
- A-4. PROCESS: How about the decision-making process? (leader and project members)
- A-5. PRINCIPLES: Any policies you emphasized in decision-making process?
- A-6. HARDSHIPS: Any hardships/ hurdle? – opponents, conflict of opinion
- A-7. STRATEGIES: How did you resolve those hardships? Any strategies? (leader and project members)
- A-8. FACTORS: Success? If so, what do you think were the factors?
- A-9. OUTCOME and EFFECTS
- A-10. REGRETS or REFLECTIONS? (leader and project members)
- A-11. OTHERS: Any other remarkable issues?

B. Food-containers Abolition Project

- B-1. ROLE: What was your role?
- B-2. BACKGROUND: What is the background? (leader and project members)
- B-3. GOAL: What was the ultimate goal? (leader and project members)
- B-4. PROCESS: How about the decision-making process? (leader and project members)
- B-5. PRINCIPLES: Any policies you emphasized in decision-making process?
- B-6. HARDSHIPS: Any hardships/ hurdle? – opponents, conflict of opinion
- B-7. STRATEGIES: How did you resolve those hardships? Any strategies? (leader and project members)
- B-8. FACTORS: Success? If so, what do you think were the factors?
- B-9. OUTCOME and EFFECTS
- B-10. REGRETS or REFLECTIONS? (leader and project members)
- B-11. OTHERS: Any other remarkable issues?

APPENDIX E: DECISION PROCESS MAPPING

Recycling Program:

Intelligence & Prescription

How the *intelligence* phase was conducted – how and what information was gathered – can be obtained through a review of the Task Force Final Report (Minamata-city 1992) and the interview with the recycling program coordinator (recycling program coordinator, personal communication, 12/26/2005):

The members of the Task Force got together almost every week – 25 meetings were held in half a year, including study meetings and tours and 12 official committee meetings (June – Nov 1992).

As an opening of the *intelligence*, the Task Force identified the position of the waste problems, which was placed as one of the top priority in the city's environmental project, the Model Environmentally-friendly City. It started the investigation with problem orientation on waste issue the city was facing: trends; current status such as the amount and the composition of waste); the present waste management system (collection and disposal); and the management cost. As a recycling program was considered from the beginning as an alternative, also recommended by city councilors, the members visited another city that was advanced in recycling program. Through collecting information, the members unofficially discussed the waste issues with citizens; visited waste collection stations in the city many times; and had discussion with workers in charge of waste collection and disposal.

As the result of the investigation, the current waste situation with its root cause was identified: 1) the waste amount has been increasing overtime; 2) the waste disposal cost has risen; 3) current disposal method (collect and burn or bury) does not take into account protecting the environment and resources; and 4) both the government and the citizens have not been concerned about waste. The projection was made: 1) decreasing current dump site lifetime, which led to; 2) the presumable financial pressure; 3) promoting environmental destruction; and also 4) citizens' improper way of waste disposal caused the explosions at the incinerator facility (Minamata-city 1992).

The Task Force concluded that the current waste disposal system (incineration or dumping) operated in the framework of 'mass-production, mass-consumption, and mass-disposal' causing air pollution and wasting resources. That system was against the 'cyclical society' toward which the city was then aiming. The alternative solution was to establish a new waste management system (with a concept of proper separation of waste materials and resource recovery as much as possible). In this way, a recycling program with 19 source separations was founded (*prescription*).

As well as the waste-relevant problems, the Task Force comprehended its social problem which was due to the Minamata-disease issue; it pointed out that the city has not contributed to environmental conservation despite of the experience of environmental pollution and suggested involving citizens. Through such inclusive and thorough investigation, the direction of the project was formed, comprehending in the waste issue and the social problem, that is, to rejuvenate the city through the waste problem issue which is most familiar to citizens (of all environmental problems).

The recycling program aimed at regaining the confidence of citizens realizing they accomplish a big project as well as contribute to the environmental protection (recycling program coordinator,

personal communication. 12/26/2005). Thus, the core concept of the recycling program was: 1) all the citizens actively and directly involved; 2) by operating the programs (material separation) by their own hands, to avoid an inhuman operation by mechanizing the system on lines such as in a big recycling factory (recycling program coordinator, personal communication. 12/26/2005). Under this concept, the recycling program was designed, referring to the waste material collection system of Zentsuji-city since the city was operating the material separation by residents' hands as well as its population size (40,000-50,000) (Minamata-city 1992) is similar to that of Minamata-city (34,000 as of 1992) (Minamata-city 2004).

Also, the new way of thinking – the citizens and the government share the responsibility of the waste disposal in collaboration was incorporated (Minamata-city 1992).

Expected advantageous effects and outcomes of the recycling program were also presented such as waste reduction with financial benefits and rehabilitation of the community.

The detailed plan of the recycling program was firmly designed, specifying methods, schedules, and cost and needed personnel for the introduction and implementation. To pursue the concept of actual and active citizen involvement, the establishment of the Recycling Promotion Committee (hereinafter, Recycling Committee) which consists of citizens, working as instructors in the material separation was also inserted in the plan.

When working in the Task Force, the Program Coordinator (as a member of the Task Force) encouraged the other members, saying “Work hard only for half a year, mates! We won’t prolong this hard job.” (recycling program coordinator, personal communication. 12/26/2005).

In the *intelligence* function, the mass media also played an important role by means of communicating information at the later stage of the process. They reported the recycling activity nation-wide repetitively, which further encouraged citizens to keep participating in their program.

Promotion

Before putting the Recycling Program into practice, the explanatory meetings with citizens on the recycling program were held in each of the 26 administrative districts citing 300 garbage collection stations from February through August 1993. More than 180 meetings were held in the 6 months including the explanatory meetings with citizens, in which 8,500 citizens participated from 12,000 households, showing how much citizens were concerned about the subject (Minamata-city (a)). The purpose of the meetings was to get understanding of residents on the policy as well as to explain the recycling method. The city staff and citizens directly (in face-to-face) discussed the subject. In the beginning of a explanatory meeting, there were voices of discontent and the distrust of the city government from the residents, saying “inconvenient”, “bothering”, or “even though the residents separate materials fine, it might end up being disposed all together” (Women’s Committee 1, personal communication. 12/25/2005). Showing sincerity and enthusiasm, the city staff stressed the importance of starting the recycling program, explaining the current situation and problems. What they most emphasized was a shared responsibility of the citizens and the government in waste disposal and management – the government’s role is collection and proper disposal of waste; the role of citizens is proper separation at the fixed date and site. They also focused on the contribution to environmental protection, enlightening residents, saying “Have we contributed to environmental conservation, learning from the Minamata-disease experience? Let’s work together to create the city who most contributes the environment, with both of us, the city and the citizens and be the top in Japan in waste management!”.

Meanwhile, "Waste Symposium in Minamata" with the theme "Let's recycle waste materials!" was held in March 1993 to promote the recycling program in the entire city. It was hosted by Minamata-city and counted the participation of 150 city staff and 800 attendees. To promote the environmental consciousness and recycling program, "Recycling Festival" and "Waste Forum" was held (under the cooperation of the city government and the Recycling Committee (see "Intelligence and Promotion") in March 1994 (Minamata-city (a); Ori 2002).

Invocation and Application

The Task Force was disbanded after completing the Final Report in November 1992. Just after that (January 1993), one of the member of the Task Force (the Program Coordinator) was appointed to put the new policy (the Recycling Program) into practice, transferred from City Planning Section to Health & Sanitation Section (recycling program coordinator, personal communication. 12/26/2005).

The implementation wholly followed the prescription the Task Force created. Starting with 3 model districts out of 26 districts in the city in March 1993, the recycling system was introduced into all districts with 300 'recycle-stations' by the August (5 months). The explanatory meetings with residents continued to be held in not-yet introduced districts. In parallel with the explanatory meetings, buyers of the recycled materials such as local shops (e.g., a liquor factory) and wholesalers (e.g., glasses or papers) were identified and contracts negotiated (recycling program coordinator, personal communication. 12/26/2005).

Most activities pertaining to the Recycling Program were conducted on the initiative of residents. The location of recycling-stations was set by the local residents. Recycling Promotion Committees (citizen) were set for each district and were trained officially by the city government, a step which was well regarded by citizens (Women's Committee 2, personal communication. 12/26/2006). Also, residents were to help material separation on the day of waste collection in turn; the schedule was made by the residents at each material collection station. Even after the Recycling Program was introduced into all the regions by August 1993, the city staff continued to visit the stations everyday for an additional support to help residents with separation. In the beginning, there were still conflicts among residents over the separation and complaints against the city government. For example, residents got angry when a person on duty at a station made claims on his or her improper separation (such as by putting magazine paper into newspapers). However, because everybody has a turn on duty, they finally became their responsibility; furthermore, if an improper separation was found by the buyer, the name of the "brand garbage" become tainted and the profits gained through selling those waste materials declines. Therefore, citizens came to understand the importance of proper separation. Also, mass media who reported on the Recycling Program played a very important role alleviating the citizens' complaint, bringing respect and confidence to Minamata-citizens. Even those who complained about the program changed their attitude when the media come to visit the site for interviews, replying "it is a lot of fun to do material recycling! (ex-mayor, personal communication. 12/25/2005)".

In addition, the program involved everybody at any level of society in central tasks. For example, workers engaging in waste collection and disposal, generally of lower statuses in society, had little confidence in themselves and the job were also invited from the beginning of the program. Attending the explanatory meetings, instructed residents of the program at the material collection stations, and encouraged to devise the idea for improving processing collected materials in the waste management facility. Such involvement got them respected from local residents which regain them their confidence as humans with their existence, and further motivated them for their work (recycling program coordinator, personal communication. 12/26/2005). The Program Coordinator found their faces become more vivid and confident than ever (recycling program

coordinator, personal communication. 12/26/2005). This resulted in changing the view of garbage and working in waste disposal from dirty, stinky, and hard.

Termination

The Recycling Program started in the model districts in March 1993, was introduced into all the districts by the August, and it has been firmly-established within following half a year. Although the project goal to introduce and settle down the recycling program in the city was accomplished within a year, the policy (the recycling program) is still ongoing; it will not be terminated unless there is no more waste generated. The effect of the program has been tracked with statistics of the amount of waste generation by the city government (Environmental Clean Center). From the review of the governmental documents, the government seems to keep informing the citizens through the city reports.

Appraisal

The assessment of the policy process itself by the city government seems not to have been conducted (though interviews and secondary materials).

Women's Committee:

Intelligence

In this decision process, *intelligence* and *promotion* went on in parallel.

In initiating the Women's Committee project, a principle of the project was created and well accepted among the members: "no leader (of the committee), no conflicts", reflecting the word of the assistant manager (Section Head) of Environmental Section: "this (the committee meeting) is not the place to fight, but to discuss how to reduce the waste; do not bring in the irrelevant topics (implying the Minamata-disease issues) (Women's Committee 1, personal communication. 12/25/2005)". In this background, there was the long-lived conflict history rooted in the Minamata-disease. As in the Section Head's word above, the objective of the Women's Committee (waste reduction) was also clarified and repetitively emphasized throughout the policy process.

The committee started with discussing what bothers them most in waste disposal at home. The members, as experts of housework, figured out that food-packaging containers and plastic grocery shopping bags were creating most of the waste: most fresh foods including vegetables and fruit sold in supermarkets were packed in styrofoam-containers. In fact, according to a questionnaire survey by the committee, 7 to 11 containers of waste were created for daily cooking per household – if shopping every other day, it counts 100 to 150 food-containers in a month. In this way, the near-term goal was set – removal/reduction of food-packaging containers at supermarkets. Information was gathered, hearing one of the largest supermarkets in the city with its opinions and past-current efforts to reduce waste. Four largest supermarkets in the city were targeted at on reducing their food-containers and shopping bags.

Field surveys in the four stores were conducted by the committee on the situation of food-packaging container usage: the request was accepted through the government's approach. As a result of the on-site investigation, the committee found that packaging of 97 food items, including mostly vegetables and fruits as well as pickles and processed fish/meat products, were unnecessary and could be removed. The result was disseminated to the four supermarkets for review before the coming meeting between the committee and the shops.

Meanwhile, the committee visited Kochi-city in Kochi, Japan, who succeeded in food-container reduction at supermarkets, to study consumer efforts, the system of supermarkets, and the supporting system of the city government. The study tour found that 70 food items had been removed in supermarkets through the efforts of consumer groups who had discussed with supermarkets. It showed a positive effect in that vegetable become sold well because consumer could check the freshness. The Women's Committee targeted 90% of the 70 items (63 items) for Minamata-city (Sakamoto (a) n.d.).

The committee meetings were frequently held, especially in the beginning of the project – 6 times a month at most (“Gomi Genryo Josei Kaigi No Ayumi”). The committee meetings were held by the call of the secretariat (set in Environmental Planning Office) although the members' request was also reflected. 16 committee members were supposed to bring back information and decisions made at the committee meeting to each group for feedback and enlightenment of the members. As the secretariat of the committee, the city government scheduled and presided at committee meetings, helped research, and created documents.

Promotion

In the *promotion* phase, I focus on the discussion meeting between the committee and the supermarkets.

Mediated by the government, a discussion meeting between the committee and the four shops were set. Here, the government played a role of a mediator – before the discussion meeting began, the city staff visited the shops several times by themselves to remove anxiety of the shops in the credibility of the project (since industries tend to resist consumer groups in general).

Open and frank discussion was held. A committee member recalled that it was good that the government directed the discussion since housewives' talking sometimes went off the rails (Women's Committee 2, personal communication. 12/26/2005). The committee always confirmed the goal and a principle in discussion throughout their meeting that 1) no conflicts, no irrelevant topics (that implies the issue related to Minamata-disease), but discussion in a cooperative way; 2) exert no pressures on the shops (Women's Committee 1, personal communication. 12/25/2005; Women's Committee 2, personal communication. 12/26/2005). Also, the presence of the government had a great influence on changing the shops' attitude. Even though consumer groups have requested shops to reduce food-containers in the past, the discussion failed to reach an agreement with reluctant shops' answering that “consumers tend to choose the item packed in containers; leftovers of products will increase when removed from containers (Ori 2002)”. With the government's involvement, the shops took the issue into account seriously.

While demands of both sides were spoken frankly, the problems (that hampered the goals) were clarified and the common goal with alternative suggestions was found. Originally the committee demanded removing containers for 97 food items identified through the site investigation. Although the shops wanted to cooperate, they were concerned with the risk of declining sales due to the removal of containers, claiming that consumers tend to buy food in containers because of its cleaner image. While the shops promised that they would consider the removal of containers for some food items suggested, the committee recognized the necessity of changing consumers' view on food-packaging. Thus, the committee held a “consumer study meeting”. Also, the committee conducted a questionnaire survey on whether food-containers are needed or not from 100 housewives (Women's Committee 3, personal communication. 12/27/2005) as well as directly asking consumers at supermarkets (“Kurashino Nakakara Gomiwo Herasou”). The result showed no need of food-containers, which convinced the shops to move forward toward their removal. Further discussion revealed the true reason (honest feeling) of the shops why they are

reluctant to go ahead for removal – they feared losing customers to other shops if they individually implemented it. This encouraged the committee to make a new solution that the four shops must conduct the container removal for the same items at the same time to maintain fairness.

There was no dispute during the discussion among committee members and between the committee and the shops. No negotiation was needed since the members always kept in mind to avoid any conflicts as well as to confirm the objectives and meaning of the committee (as waste reduction). It was a lesson from Minamata-disease experience, where people had not been able to discuss if their standpoint was different. According to a member, “the resolution naturally came up when we express our mind honestly (Women’s Committee 2, personal communication. 12/26/2005)”; “Through discussion, we talked what were the problem on waste reduction (what bothers them most about waste issues) each other (government, consumer, and shops) which was food-containers (Women’s Committee 1, personal communication. 12/25/2005; section head, Environmental Measurement Section, personal communication. 12/27/2005)”. The atmosphere of the committee meeting was enjoyable in that everybody had alive faces, able to say whatever came to mind (Women’s Committee 2, personal communication. 12/26/2005). Also, both committee members and the city staff had a strong recognition that every participants (the committee, the government, and the shops) were “at the same table”, implying at equal status despite their different stands and perspectives. In the interview, some stressed a same term, “Kyodo” (indicating ‘work together in collaboration’) between the government, the committee, and the shops. In addition to the efforts of the city government and the committee, cooperative attitude of the shops can not be ignored, which is also due to the recognition of the importance of the environment as Minamata-citizens (Women’s Committee 3, personal communication. 12/27/2005). As discussion meetings went on, the cooperative relationship between the committee and the shops was established (Sakamoto n.d.b).

Although the government joined the discussion to preside and mediate the two groups, the initiatives and decisions were left to the Women’s Committee.

Prescription and Invocation

In the beginning, the committee sought to remove over-paperpackaging as well as plastic food-containers. However, as the meeting with the shops went on, it was decided to focus initially only on food-containers (“Gomi Genryo Josei Kaigi No Ayumi”). The questionnaire to the four shops suggested the food-container removal for 65 common items out of the 97 food items which the Women’s Committee originally proposed, which was prescribed as the Food-container Abolition Agreement of 1998. The draft was created by the secretariat, reviewed by the Women’s Committee, and then confirmed by the four supermarkets. The due date of implementation was not specified.

In the Second Food-containers Abolition Agreement of 2000, 22 individual and common items were included. By this time (after the first agreement) shops voluntarily removed other items, the items already removed and some common items are confirmed with the four shops. The other items remaining in the 97 items (originally suggested) was left to the shops’ own efforts and decision, which was stipulated as “food-container removal items to be examined in the future” in the second agreement.

Application

The (first) Food-containers Abolition Agreement was signed between the committee and the four

supermarkets all together in the presence of the mayor in September 1998, that is, it was done within 9 months since the project started in December 1997. The four shops implemented the removal of food-containers for 65 items soon after the first agreement. The committee audited the supermarkets for food-container. As a result, unexpected performance was seen – some shops have made remarkable efforts to remove containers for the items besides the ones stipulated in the agreement (secretary of Women's Committee, personal communication. 09/08/2006; vice chief, Environmental Planning Office, personal communication. 12/27/2005). According to the recent research, only 16 items of the original 97 items the committee requested have not been achieved (Women's Committee 3, personal communication. 08/25/2006).

Termination

Although the big movement on food-container removal ended after the second agreement, the Women's Committee has continued the regular audits in the shops by regular audit. The shops are spontaneously making efforts to reduce the containers when they introduce new food items. Also, the recently established project (1999) "Eco-shop" Certification System assumed the role of evaluating the environmental behavior of business enterprises in a more comprehensive way. This indicates that the project of reducing food-containers is still ongoing.

Appraisal

Although the members of the Women's Committee were mostly satisfied with the accomplishment of the Food-container Abolition Project, the recent performance in their activities are not as active as before. Some claimed it attributes to that the government carries out the secretariat, feeling the committee does not handle the whole initiative in the process – committee meetings are called basically by government's request, which also changes frequently with the organizational change of the city government. Thus, they felt that the success of a committee project depends on the city staff's attitude (sincerity, enthusiasm) in charge of the secretariat at the time. In addition, some pointed out that the current standstill performances of their projects are because none are urgent matters, suggesting that people would work seriously when the issue is in crisis (Women's Committee 2, personal communication. 12/26/2005).

APPENDIX F: INSTITUTIONAL REVIEW BOARD APPROVAL

December 8, 2005

Rika Ikemoto
Natural Resources, James Hall
14 McDaniel Drive, Box 2010
Durham, NH 03824

IRB #: 3566
Study: Improving Municipal Solid Waste Policy to Counter Over-Consumption
Approval Date: 12/08/2005

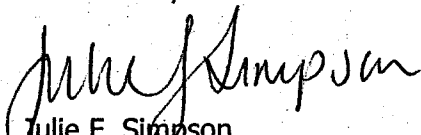
The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study as Exempt as described in Title 45, Code of Federal Regulations (CFR), Part 46, Subsection 101(b). Approval is granted to conduct your study as described in your protocol.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, *Responsibilities of Directors of Research Studies Involving Human Subjects*. (This document is also available at <http://www.unh.edu/osr/compliance/irb.html>.) Please read this document carefully before commencing your work involving human subjects.

Upon completion of your study, please complete the enclosed pink Exempt Study Final Report form and return it to this office along with a report of your findings.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,


Julie F. Simpson
Manager

cc: File
Ted Howard

Research Conduct and Compliance Services, Office of Sponsored Research, Service Building, 51 College Road, Durham, NH 03824-3585 * Fax: 603-862-3564