

**The Construction Cost of Municipal Waste Incinerators
Counter Measures against Dioxin
The Entire Picture of Domestic Expenditure and Its Trend
(Interim Report)**

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**Greenpeace Japan
Greenpeace International**

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Counter Measures against Dioxin
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(Interim Report)
(English Summary)**

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Greenpeace has entrusted this survey to Environmental Research Institute Inc. in March 2001.

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ERI is one of the reliable independent consultant and think tank established in 1986, tackling and seeking solutions for global and local environmental problems. In addition to the contract research for the government sectors' environmental policy making, ERI has been playing an important role as an independent NGO research institute through presentation and advice based on voluntary research projects. ERI is also promoting the effective environmental education through research projects with citizens participatory environmental monitoring. ERI has been developing and providing various original computer software to local municipalities as the useful tools for implementing the environmental administration.

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Executive summary

Introduction

The amount of wastes produced by households in Japan is almost 400 million tons per year. These wastes are then incinerated in 1800 municipal solid waste incinerators (MSW). The number of incineration plants in Japan equals almost two thirds of the large scale incineration plants currently existing in the world¹. It has been reported that the total release of dioxins to air in Japan was the largest among the 15 countries surveyed by UNEP in 1996 as the World Dioxin Inventory².

While there were various facilities that emit dioxins into the air, waste incineration is the main identified source here in Japan. So far, vast amounts of taxpayer's money have been invested to construct and improve the facilities of the incineration plants all over Japan. These additional costs have been expended in an attempt to improve old type incinerators with installation of advanced technologies for the reduction of exhaust gas dioxin concentration, and for the construction of new large scale incineration plants under the pretext of dioxin control. These technical counter measures have been claimed to be the only solution to reduce dioxin releases into the air and have taken priority over other policies and possible measures for dioxin control.

How much money has been invested to incinerate household waste in our society? What is the true costs of these technological attempts to control dioxin emission from incineration plants? Are these tremendous expenditures reasonable for the establishment of resource sustainable society and for the solution of avoiding the hazardous chemical substances in our future world? Finally, how do developing countries evaluate the Japanese investment towards incinerators as they attempt to shift from open air burning of wastes to more refined waste management systems?

Greenpeace commissioned the Environmental Research Institute Inc. in March 2001 to examine the full extent of tax investment that Japanese government has expended so far in the promotion of waste incineration. This report reveals for the first time the vast amount of tax investment towards the construction of waste incineration plants and various technical counter measures intended to control dioxin emissions from incinerators.

Summary

The expenditure for constructing waste incineration plants are mostly covered by national subsidies (for those plants that fulfill certain conditions) and the flotation of loans by the local municipalities. The rest are covered by the general budget of each municipality (Fig.2-1). The information for this survey was derived from reports by the Ministry of Environment (former Ministry of Health and Welfare) concerning national subsidies and the Ministry of General Affairs (former Ministry of Home Affairs) regarding loans from municipalities. From this information it has become clear that the total expenditure for the construction and improvement of waste incineration plants in Japan has cost the taxpayer between 600 billion yen to 800 billion yen per year over the last five years. This is approximately 5 – 7 billion dollar as exchange rate 120 yen/dollar. (The exchange rate is set as 120yen/dollar hereafter.)

¹ M. Hiraoka et al.: Organohalogen Compounds, 19, 275-291 (1994)

² UNEP, Dioxin and Furan Inventories - National and Regional Emissions of PCDD/PCDF, May 1999.

1. Trend of national subsidies and its trend

The information on national subsidies for the construction of waste incineration plants was derived from the newly adopted projects of FY1995 to the projects unofficially notified in FY2000. Regarding the national subsidies for advanced technologies for emission gas control (e.g. more sophisticated facilities such as bag filters for reducing the dioxin emission from the stacks), data was also obtained also from the newly adopted projects of FY1995 to the projects of unofficially noted in FY2000.

1.1 The number of cases applied national subsidies for the construction of waste incineration plants and advanced technologies for emission gas control facilities and its trend

The Ministry of Health and Welfare announced new guidelines for controlling dioxin emissions from the waste incineration plants in 1997. Since then, the number of national subsidies for advanced emission control facilities such as bag filters has increased by almost the same number as that of construction of new waste incineration plants. However, the number of subsidies for the construction of new incineration plants has decreased because national subsidies have been limited to larger scale plants (capacity of incineration over 100t/day). On the other hand, the value of subsidies per project was increased and the subsidies for facility improvement for controlling dioxin emission have increased greatly. In FY2000, with the enactment of new regulations reinforcing the exhaust gas emission for dioxin from December 2002 near at hand, the number of subsidized projects was 171 which was a 10 fold increase from that of 1995 and 1996. (Figure 1)

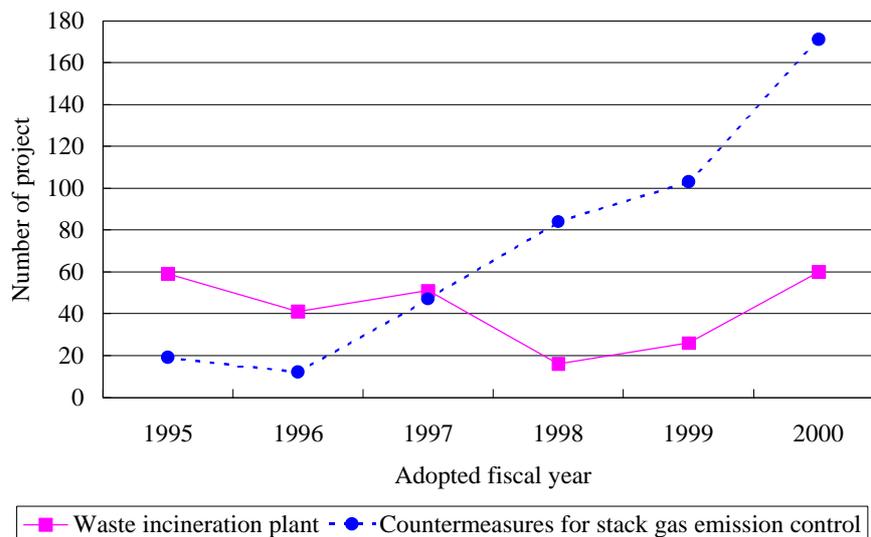


Figure 1 Trend of national subsidized projects

1.2 Trend of national subsidies amount

The amount of national subsidies for waste incineration plants has leveled off during these years to around 40 billion yen (330 million dollar) per year. However, as for the improvement of facilities, the number of projects was increased. Since the average term of construction became longer, the amount of subsidies has increased into 40 billion yen in FY2000, which is a 10 times increase from the year 1997.

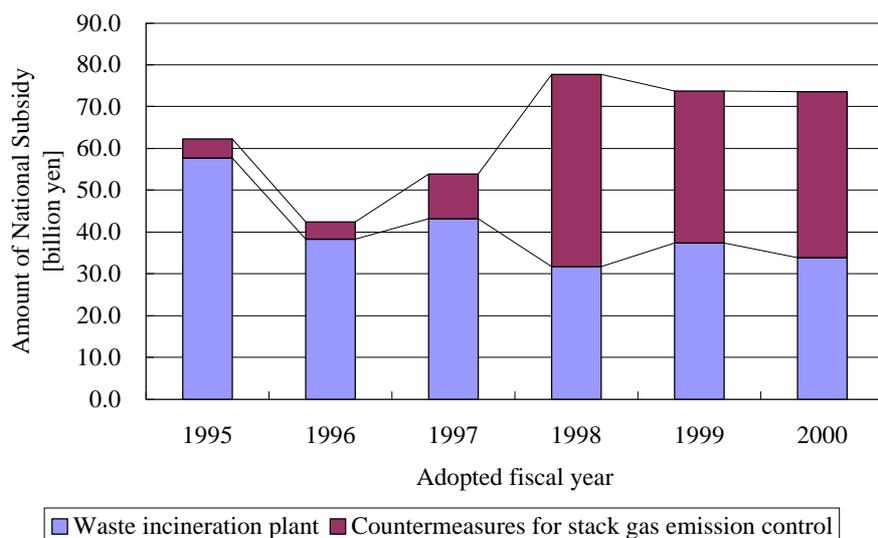


Figure 2 Trend of National Subsidy Amount

The total amount of national subsidies shown in Figure 2 is the sum of subsidies executed up to FY1999 including nonofficial notified amount in FY2000. However, the final total of the cost for those projects under construction since FY1997 and FY1998 were not fixed. Therefore, the final amount of national subsidies was not fixed as well at that time. This means that the amount of subsidies after FY1998 looks small against the final amount of subsidies expected in future. It has to be noted that the final amount of national subsidies could be far higher at the year of project completion.

Thus, judging from the factors that subsidies per project increases, the number of project increases and the period of construction becomes longer, it is possible to estimate that the amount of national subsidies will increase until FY2002, the year from which the new stringent regulation for exhaust gas emission will start.

2. Trend of flotation of loans by municipalities

Table 1 shows the amount of loans (bonds) by local municipalities from FY1991 to FY1999 for projects concerning the household waste incineration and final disposal (except human waste treatment).

Table 1 Trend of authorized municipality loans concerning waste incineration plant

Authorized fiscal year	Amount of Flotation of loans [million yen]			
	Waste incineration plant	Land acquisition	Waste transportation facilities	Sum
FY 1991	200,991	33,454	7,440	241,885
FY 1992	286,966	42,070	3,694	332,730
FY 1993	443,559	179,760	4,115	627,434
FY 1994	446,654	31,143	6,326	484,122
FY 1995	556,705	43,955	7,227	607,887
FY 1996	497,327	37,180	6,987	541,495
FY 1997	439,593	41,153	6,926	487,673
FY 1998	505,467	46,490	6,537	558,493
FY 1999	399,216	42,096	5,327	446,639

Source: Ministry of general affairs

Figure 3 shows the trend of local loans authorized (permitted) by the national government (former Ministry of Home Affairs). Among them, 80-90 % was for waste incineration plants and facilities (except FY1993). However, loans for purchasing the land and for preparing the waste transportation facilities were relatively small (Note 1).

Note 1: In FY1993, the ratio of land purchasing was comparatively large for about 30%. In that same year, Tokyo Metropolitan Government had transferred the authority of waste management to municipalities of 23 wards in Tokyo and had acquired the land under the policy that each ward has to have a waste incineration plant in future. Consequently, 13.58 billion yen (100 million-dollar) out of 18.22 billion yen (150 million dollar) were expended for land acquisition in Tokyo.

As shown in Figure 3, the trend of the amount of authorized loans grew rapidly until FY1995 and after that it leveled off or decreasing slightly.

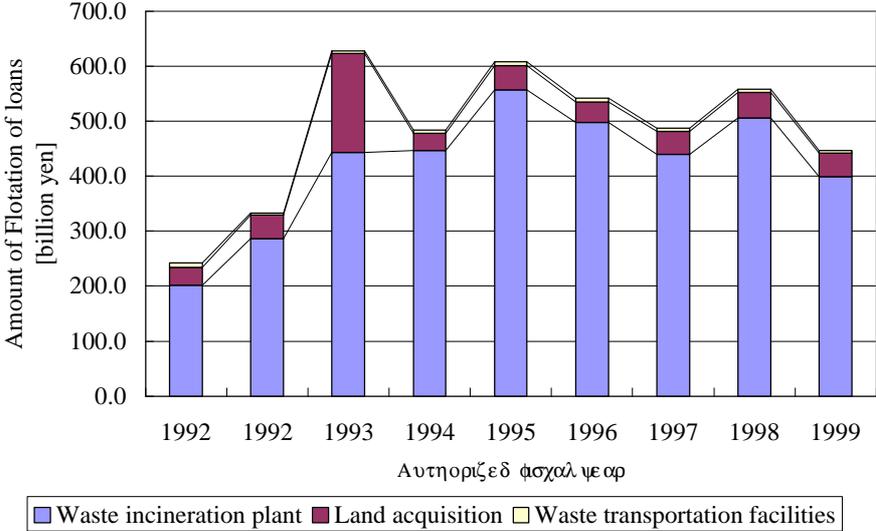


Figure 3 Trend of authorized municipality loans concerning waste incineration plant
Source: Documents from Ministry of General Affairs

3. Estimation of total expenditure

We have estimated the total expenditure for waste incineration plants in Japan by analyzing the above data. Figure 4 shows the trend of expenditure including the revenue in detail. It is found that almost 600 billion-yen – 800 billion yen (5 – 7 billion dollar) were expended for the construction of waste incineration plants every year. However, it has to be noted that this is may not reflect the total expenditure for the projects of a certain fiscal year. This is because there are inconsistency for the year of execution between national subsidies and municipal loans and also there are certain assumptions applied by substituting representative number for those data not obtained so far. Consequently, 10-20% of the total expenditure was supported by national finance and the rest (80-90%) was supported by the expenditure of local municipalities. Again, it has to be noted that the amounts for the latest projects supported by national subsidies appear to be small and may not accurately reflect the final costs.

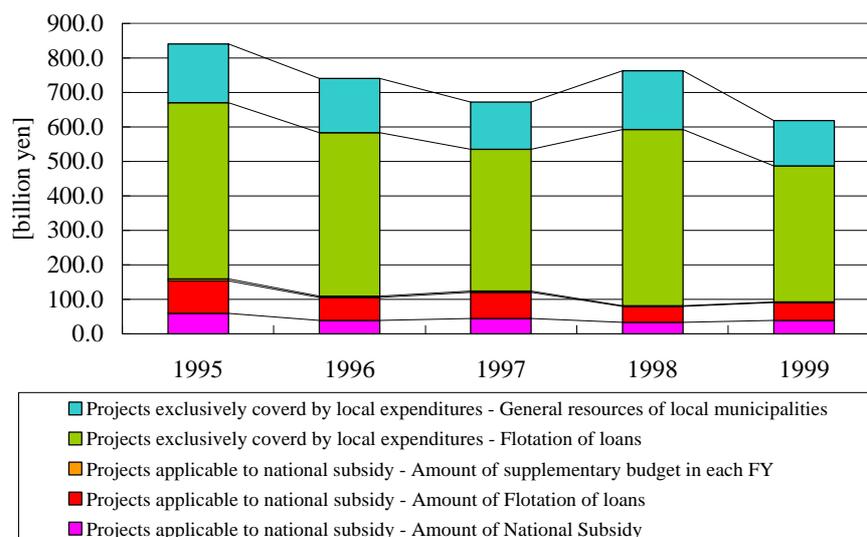


Figure 4 Estimation of total expenditure for waste incineration plant

4. Conclusion

(Mechanism of tax pumped into the incineration plants)

Almost 50-80% of the construction cost of waste incineration plants is ultimately expended by the national government through subsidies and tax funds to local municipalities. In other words, under this mechanism, the tax expenditure that each municipality has to bear is rather small. The ratio of local municipalities' tax burden account for the total expenditure is less than 2.5% at the first fiscal year. Further the redemption of the loans over a span of 10 years or more after the completion of the projects is partly expended by the national fund. This also minimizes the expense burden of municipalities. This is the same mechanism as for other public works such as dam construction. Consequently, the policies of each municipality are greatly affected by the intention of national government, especially of its national subsidies and tax fund. This is one of the aspects that has made independent policymaking by local governments inactive and difficult.

(The whole picture of tax expenditures used for waste incineration plants)

It was found that almost 600 billion yen – 800 billion yen (5 – 7 billion dollar) have been expended for the construction of waste incineration plants every year both from national and municipal expenditures. In FY2000, with the enactment of new regulation reinforcing the exhaust gas emission for dioxin from December 2002 near at hand, the number of subsidized projects for existing plants was increased 10 times from that of 1995 and 1996. It shows that those existing incinerators were built and being operated carelessly about dioxin emission.

(Policy change of waste incineration into larger scale and area-wide type plants)

There was a policy that the waste incineration and disposal should be done within the area of the each municipality before FY1998. However, the former Ministry of Health and Welfare had greatly changed the system of national subsidies in FY1998 based on the policy shifted to construct the larger and area-wide incineration plants (in principal the minimum requirement for subsidy is more than 100t/day capacity of incineration).

The impact of this policy shift appeared quite definitely. The average scale of the facilities (plants) funded by national subsidies in FY1998 became more than 2 times larger compared to that of the year before. On the other hand, the number of subsidized projects decreased one third at the same time. This evidence shows that the Japanese policy of waste management has obviously turned 180 degrees around to strengthen incineration by collecting the waste from area-wide municipalities and by constructing large scale incineration plants through out country.

However, the former Ministry of Health and Welfare had to withdraw this minimum requirement for national subsidies in FY2000. This was because of severe opposition from the municipalities of rural areas of low population density against this policy shift. Naturally, the area-wide garbage collection would be a large burden for those small municipalities. However, since the national government still sticks to the principal of area-wide waste management, the basic policy of constructing the area-wide and larger scale incineration plant has not been changed.

(Apprehensions caused by area-wide and large-scale incineration plants)

During these few years, various laws and regulations concerning resource recycling have been established in Japan. At the same time, the volume of waste has been reducing steadily. It is reported that the rate of operation is declining in some of the large-scale incineration plants in Tokyo and the lack of waste is becoming reality. This gives a hint of the future outcome of the Japanese waste management policies relying heavily on area-wide and large-scale incineration plants. This policy is apparently inconsistent with the establishment of sustainable society by reducing the waste from our society. In other words, we have to recognize that the policy of heavy dependence upon the incineration will interrupt (hinder) people's effort to make a resource-recycling society.

(Opacity (Turbidity) of tax expenditure for the waste incineration plants)

It becomes clear through this research and analysis that the total tax expenditure concerning waste incineration plants in Japan has been hidden and not fully grasped by the public. The mechanism of the expenditure is quite complicated in that various government organizations such as former Ministry of Health and Welfare (Ministry of Environment), former Ministry of Home Affairs (Ministry of General Affairs), prefecture governments and local municipalities, have been expending taxes based on various different laws and legislation.

Although each Ministry or government authority does have sufficient information about their tax expenditure (e.g. Ministry of Environment for national subsidies, Ministry of General Affairs for flotation of loans of local municipalities, and local governments for project base expenditures), the related documents and data are not prepared and publicized for the taxpayers in an appropriate manner.

In addition to that, the revised Guidelines (thick printed book) which indicate the detail requirements and rate of national subsidies have been distributed to each local municipality every year. These Guideline books are published and sold by Japan Waste Management Association, an extra-governmental organization.

Further, illegal collusion between contractors of the various public works has been highlighted recently. It is not the exception in the cases of waste incineration plant construction. In August 1999, the Fair Trade Commission issued a recommendation of exclusion as a violation of antitrust laws against 5 major companies, whose market share of the sales of large-scale incinerators over 100t/day reached 70%. In addition to that, 292 laboratories of dioxin analysis have also received the notification from the Fair Trade Commission in the same year. Judging from this evidence, it has to be noted that the tax expenditure for dioxin control measures in Japan suffers from injustice, is unreasonable and is not transparent. Greenpeace intends to continue to examine and report on this important theme.

5. Greenpeace Demands:

The upcoming Stockholm Convention on Persistent Organic Pollutants (POPs) clearly identifies incineration as a potentially significant source of by-product POPs such as dioxins, furans, HCB and PCBs. To reach the Convention's aim of ultimate elimination of by-product POPs, means that the investments and subsidies for incineration should be discontinued and the national government and municipalities must direct subsidies and tax-refunds towards waste prevention, re-use and recycling. Though the responsibility for waste management in Japan lies primarily with the local communities, it is clear that the central government is currently promoting incineration through its subsidies and tax refunds.

To further direct waste management away from incineration, the central government should also set out a clear policy and action plan to halt the expansion of incineration in the very short term and to phase out incineration. This is necessary because incineration is an important POPs source that needs to be eliminated. But incineration also disperses other toxic substances into the environment, such as heavy metals, and is a known cause of a wide range of health effects to communities that live near incinerators. Incineration is also a very expensive way to

destroy valuable resources, costs that are shouldered by these same communities.