

East Coast Environmental Conference
April 27, 2006 in Westin Hotel Halifax,
Nova Scotia, Canada

Presentation Theme

Japanese Incineration

Focused Waste Management &

Citizen Involvement

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**Copy right: Environmental Research Institute, Tokyo and
Aoyama Labo. of Musashi Institute of Technology**

East Coast Environmental Conference
Solutions for the Future... EC²

2006

Preliminary Program

CONFERENCE HIGHLIGHTS

SOLID WASTE RESOURCE MANAGEMENT
RECYCLING / COMPOSTING
DIVERSION
ENFORCEMENT
BIO SOLIDS
EMERGENCY PREPAREDNESS
CONSTRUCTION & DEMOLITION

WATER & WASTE WATER
WASTE DIVERSION
RISK MANAGEMENT
ALTERNATIVE ENERGY
ECO-EFFICIENCY
CLIMATE CHANGE
EXPORT DEVELOPMENT

Hosted by
The Nova Scotia Association of Waste Reduction Coordinators &
the Nova Scotia Environmental Industry Association



NSAWRC
Nova Scotia Association of
Waste Reduction Coordinators
11 Rue 2000
Halifax NS B3K 2L1

April 25-27, 2006
Westin Hotel Halifax



Nova Scotia Environmental
Industry Association

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NOVA SCOTIA
Environment and Labour



ALS Laboratory Group



World Ranking of Environmental Sustainability Index(2002) in Davos(Swiss) Conference

- 1.Finland
- 2.Norway
- 3.Sweden
- 4. Canada
-
- 62. Japan

Environmental Sustainability Index 2002 Rankings
An Initiative of the Global Leaders for Tomorrow Environment Task Force,
World Economic Forum

| Rank Country ESI指数 | | | | | | | | |
|--------------------|-------------|------|----|----------------|------|-----|-----------------|------|
| 1 | Finland | 73.7 | 49 | Zimbabwe | 52.9 | 97 | Mexico | 45.4 |
| 2 | Norway | 72.8 | 50 | Honduras | 52.9 | 98 | United Kingdom | 45.2 |
| 3 | Sweden | 72.2 | 51 | United States | 52.8 | 99 | Guinea | 45.2 |
| 4 | Canada | 70.4 | 52 | Byelarus | 52.5 | 100 | Nepal | 44.8 |
| 5 | Switzerland | 68.2 | 53 | Israel | 52.3 | 101 | Gambia | 44.5 |
| 6 | Uruguay | 66.2 | 54 | Germany | 52.1 | 102 | Indonesia | 44.5 |
| 7 | Iceland | 65.7 | 55 | Nicaragua | 51.5 | 103 | Sudan | 44.5 |
| 8 | Austria | 63.9 | 56 | Thailand | 51.3 | 104 | Burkina Faso | 44.2 |
| 9 | Costa Rica | 62.9 | 57 | Papua N.G. | 51.3 | 105 | Iran | 44.0 |
| 10 | Latvia | 62.8 | 58 | Bosnia and H. | 51.1 | 106 | Togo | 43.9 |
| 11 | Hungary | 62.6 | 59 | Morocco | 51.1 | 107 | Philippines | 43.5 |
| 12 | Croatia | 62.5 | 60 | Jordan | 51.0 | 108 | Syria | 43.3 |
| 13 | Australia | 62.1 | 61 | Mozambique | 50.9 | 109 | Zaire | 43.1 |
| 14 | Panama | 61.9 | 62 | Japan | 50.5 | 110 | Ivory Coast | 43.0 |
| 15 | Botswana | 61.8 | 63 | Greece | 50.4 | 111 | Angola | 42.6 |
| 16 | New Zealand | 61.8 | 64 | Tunisia | 50.2 | 112 | Tajikistan | 42.2 |
| 17 | Argentina | 61.5 | 65 | Turkey | 50.1 | 113 | Oman | 42.1 |
| 18 | Slovakia | 61.5 | 66 | Romania | 49.9 | 114 | Trinidad & Tob. | 42.0 |
| 19 | Estonia | 59.8 | 67 | Ghana | 49.8 | 115 | Jamaica | 42.0 |
| 20 | Brazil | 59.6 | 68 | Czech Republic | 49.7 | 116 | Pakistan | 41.6 |
| 21 | Bolivia | 59.5 | 69 | Bulgaria | 49.3 | 117 | Azerbaijan | 41.5 |
| 22 | Colombia | 59.2 | 70 | Zambia | 49.3 | 118 | Burundi | 41.2 |
| 23 | Slovenia | 58.6 | 71 | Guatemala | 49.2 | 119 | India | 41.0 |
| 24 | Denmark | 58.1 | 72 | Macedonia | 49.1 | 120 | Uzbekistan | 41.0 |

Japan is
No.62

CONTENTS

1. Present State of Japanese Waste Management in FY2003

- Amount of discharge and treatment system and method
- Cost of waste treatment

2. Challenges of Japanese Waste Management

- Control of National Government (subsidy and regulation)
- High dependency on hardware (Incineration and land fill) and high cost
- Promotion of Plastic waste incineration for the extension of the life of landfill site
- Closed decision making process (lack of citizen participation)
- Lack of communication and discussion among stake holders.
- Increased law suit concerning construction of incinerator and selection of land fill site.

3. Environmental Risk concerning Waste Treatment

- Air Pollution by trace chemicals (dioxins, metals and VOCs etc.) emitted from the stacks of incinerators and melting furnaces (Pyrolysis) of MSW and industrial wastes.
- Most of the citizens are concern about plastic waste incineration as thermal recovery
- Citizen Participatory pine needle monitoring of ambient air
- Citizen Participatory soil monitoring for heavy metals

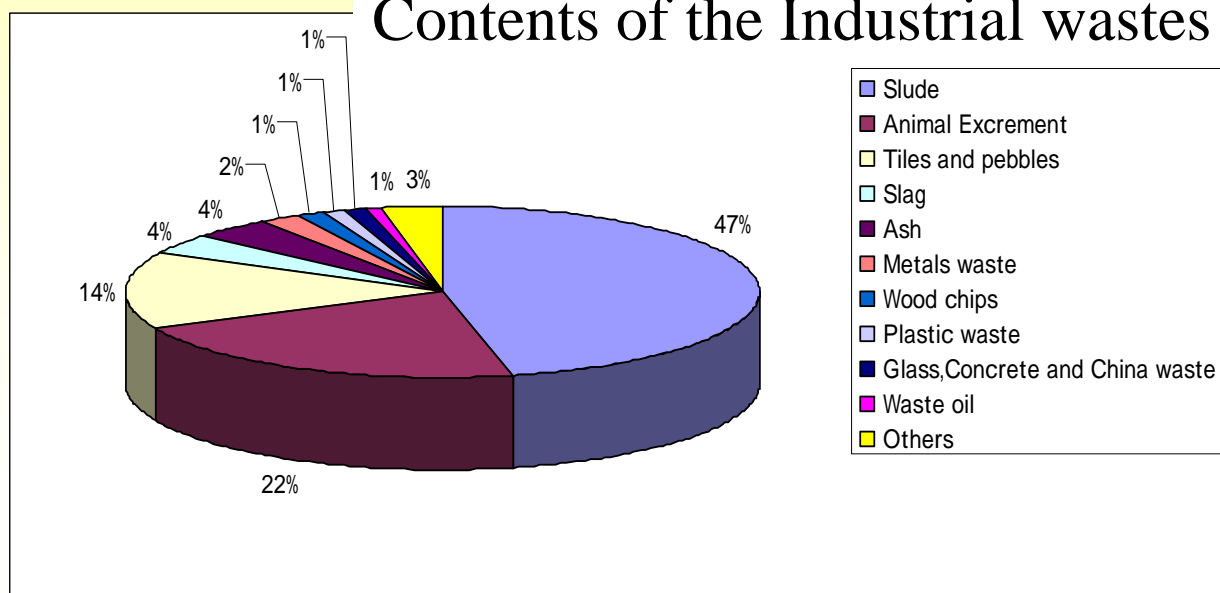
4. What we need towards Zero Waste in future

- Local autonomy, citizen participation, stakeholder involvement,
- Alternative technology and measures for incineration and landfill

Waste in Japan (FY2003)

| | Municipal Solid Waste | Industrial Waste (see Fig. below) |
|------------------|-----------------------|--------------------------------------|
| Discharge amount | 51 million ton | 412 million ton |
| Incineration % | 78 % | 75% |
| Final Disposal | 3.6% | 7.3% |
| Recycle Rate | 17% | 49% |

Contents of the Industrial wastes



One of the law suit case

Fujimi Lake

Its natural beauty and Ecosystem was totally devastated by the huge incinerator.



**Local Governments constructed
Pyrolysis for industrial wastes
And final disposal site Subsidized by National Gov.**



Before

Total cost of this project; ¥23.1 bil. (\$257mil.CA)

Population;
30,000 in **Kasama city**
3mil. in Ibaraki prefecture

After



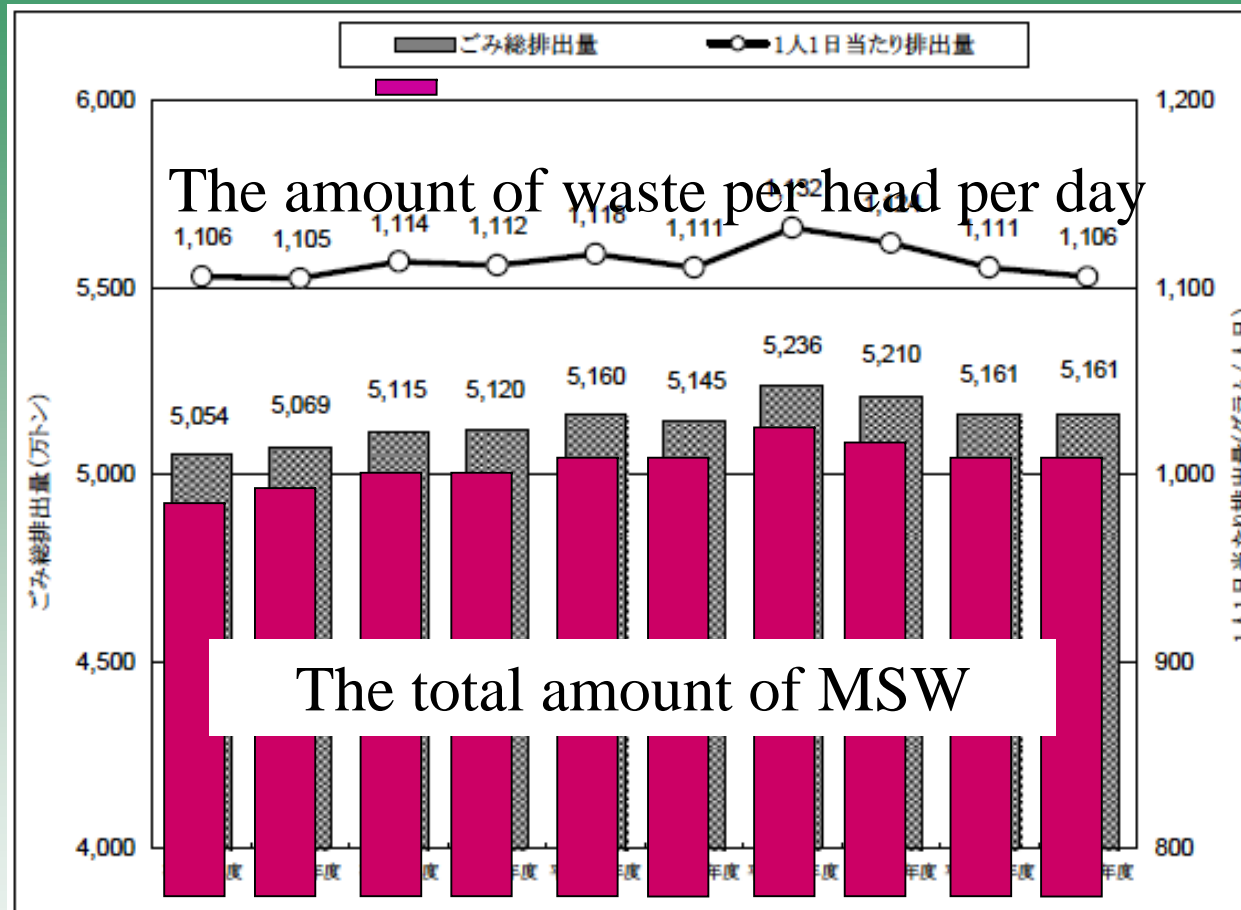
Landfill Area: 97,700m²
Capacity: 2,400,000m³



Pyrolysis 145t /day



A Trend of the Amount of Waste (1994 ~ 2003)



Source:MOE , 2006.11.14 press release document

The amount of waste (Municipal Solid Waste) had not decreased for decade!

The total emission of waste had been kept over 50 million tons/year.

The amount per head per day had been constantly over 1,000g!

Nerima Ward

48.16km²

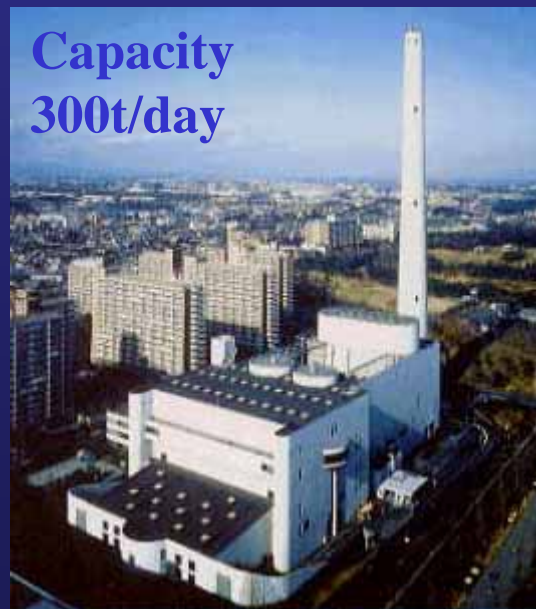
23 Wards in Tokyo

621km²



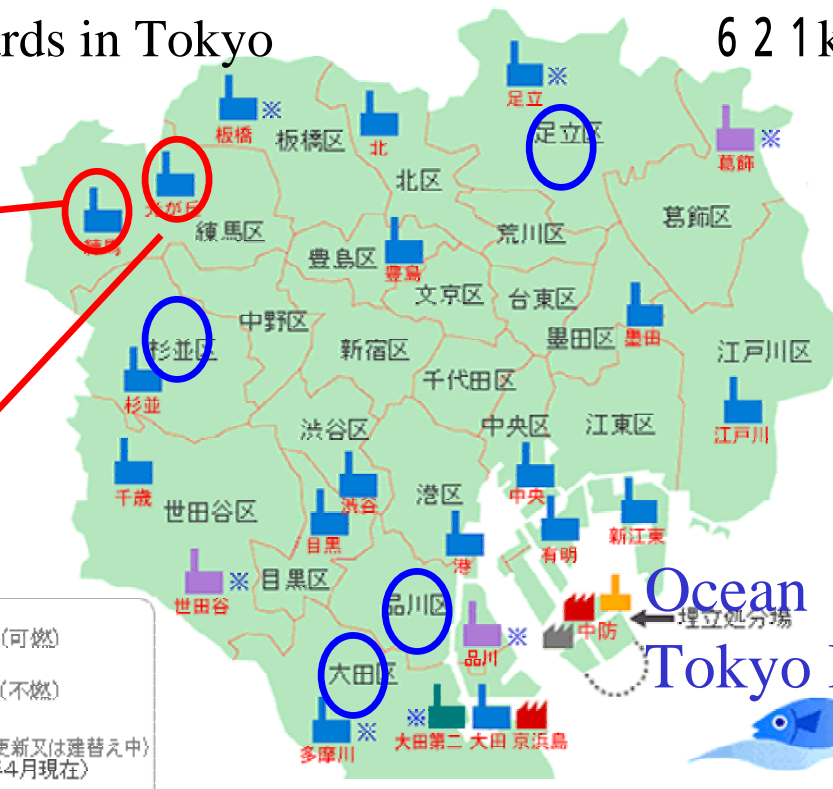
Capacity
520t/day

300t/day × 2 furnaces
Constructed 1992, ¥10.5bil.



Capacity
300t/day

150t/day × 2 furnaces
Constructed 1983, ¥10.5bil.



- 清掃工場(可燃)
 - 清掃工場(不燃)
 - 清掃工場
(プラント更新又は建替え中)
(平成17年4月現在)
 - 不燃ごみ処理センター
 - 粗大ごみ 破碎処理施設
破碎ごみ処理施設
 - 灰溶融施設(建設中)
- ※は、灰溶融炉設置工場

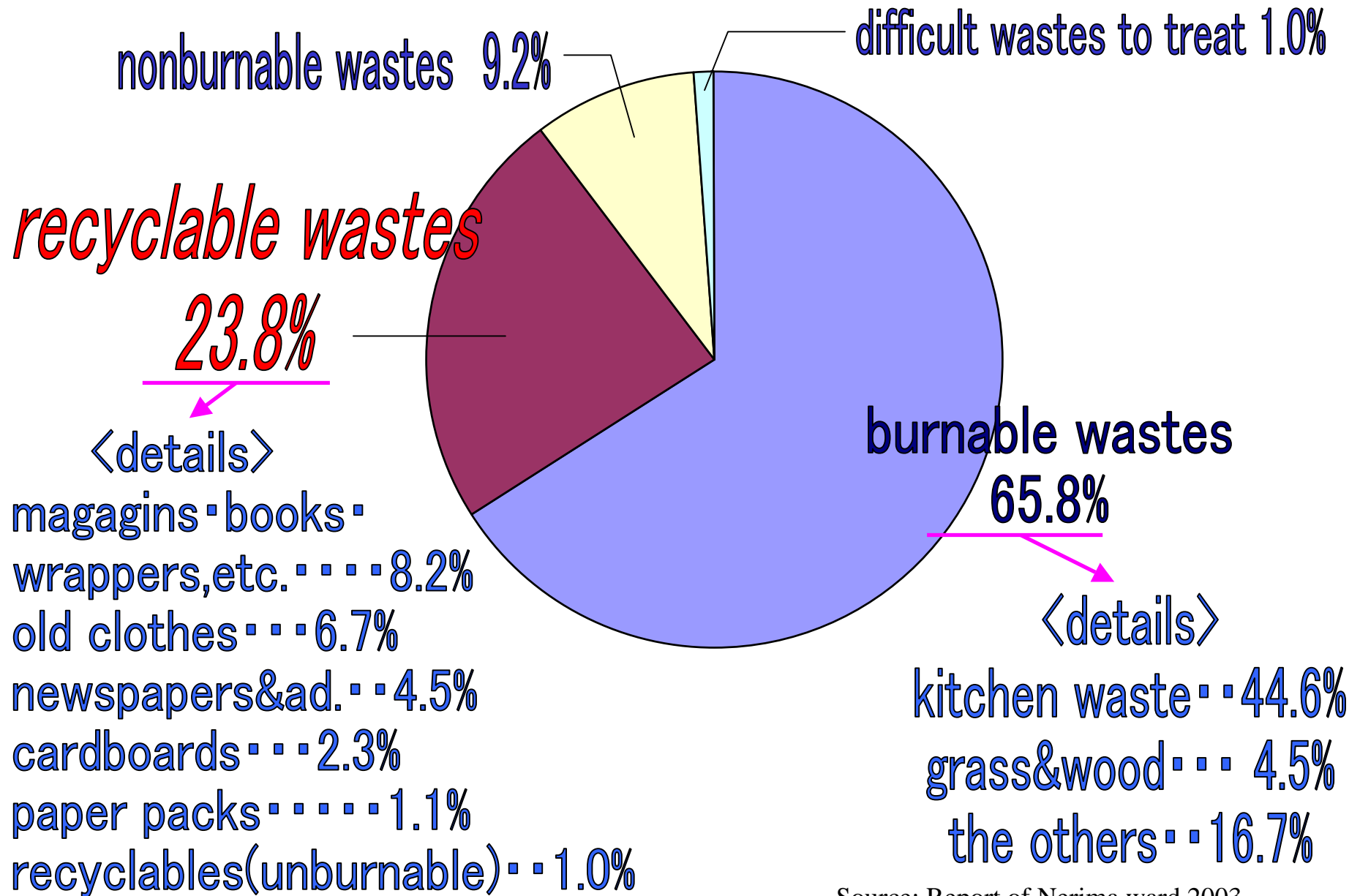


Population : 687,726
Pop.Density: 14,280/km²

Waste Collection by Municipal Gov.(Nerima)

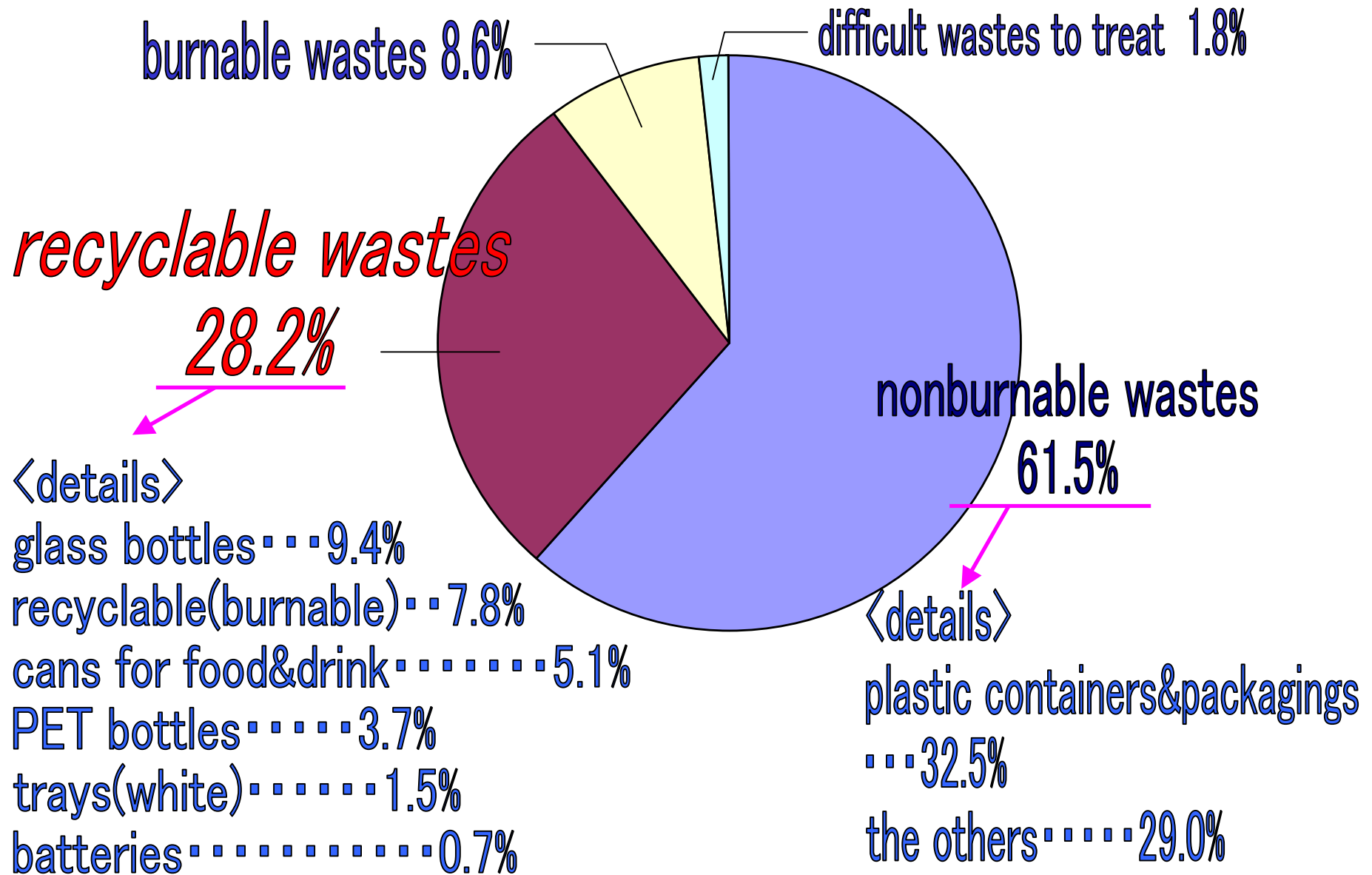
- Burnable waste ··· 2 /week
- Non-burnable waste ··· 1 /week (Landfill)
- Recyclable collection
- Paper waste ··· 1/week
- Food cans and bottles ··· 1/week
- Pet bottles ··· 1/week(Partly)

Details of the collected waste as burnable.



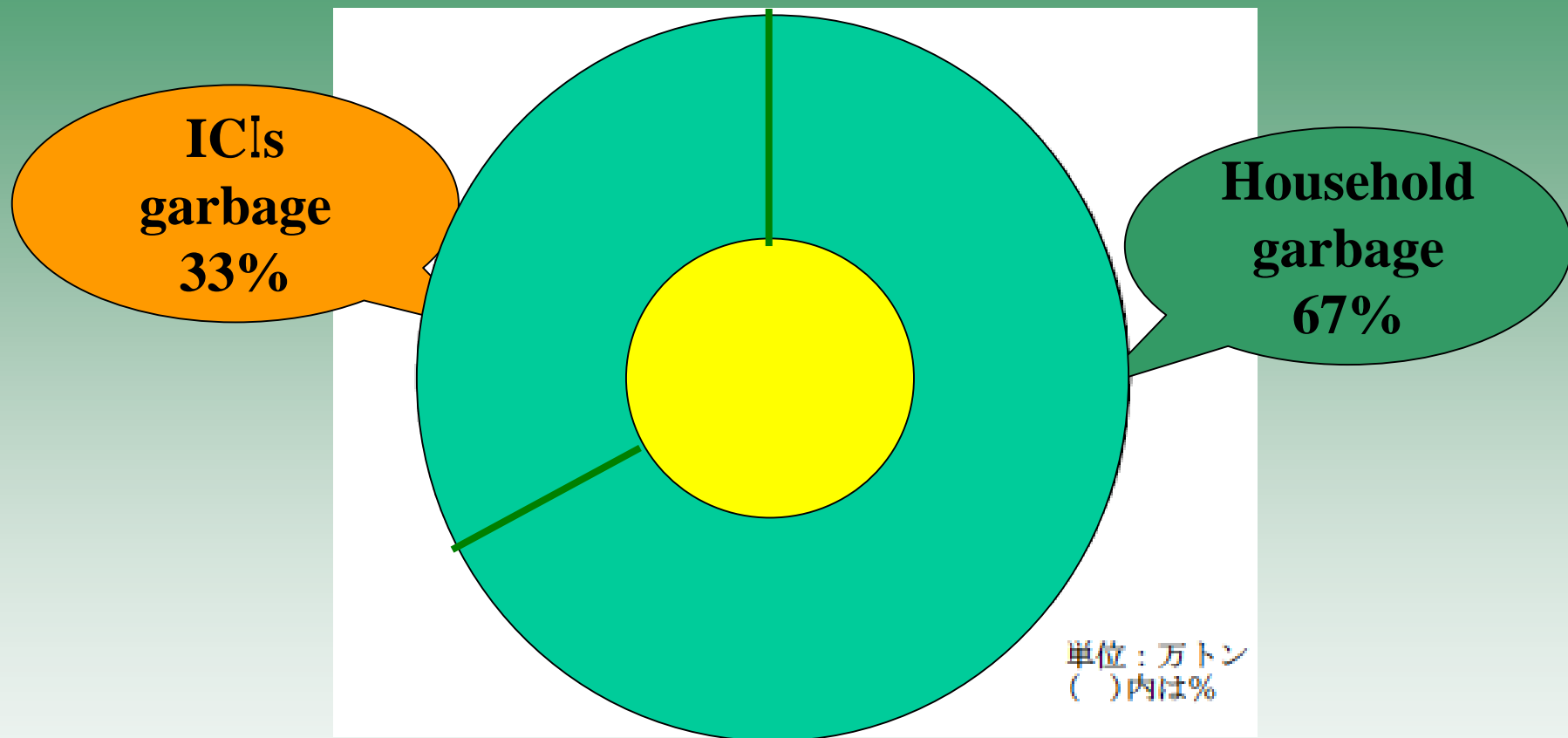
Source: Report of Nerima ward,2003

Details of the collected waste as nonburnable.



Municipal Solid Waste (Rate of Household and CIC)

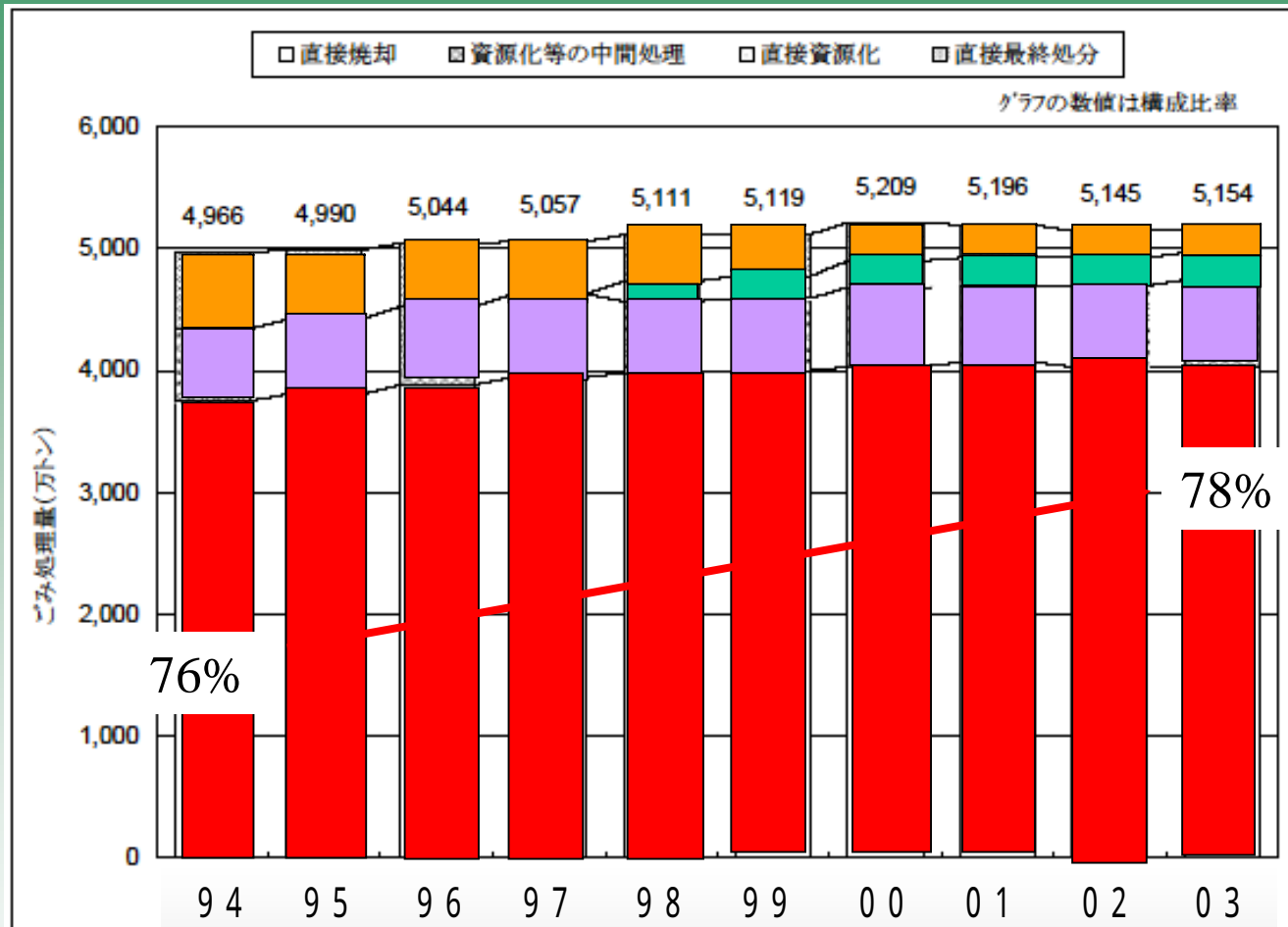
Total Emission is about 51,610,000 tons/year



In urban areas like Tokyo and Osaka, the the ratio of CICs waste are very high; Osaka is the highest city in Japan (60%).

Source:MOE , 2006.11.14 press release document

A Trend of Waste Treatment (1994 ~ 2003)



Landfills disposal

Direct diversion to resource recovery

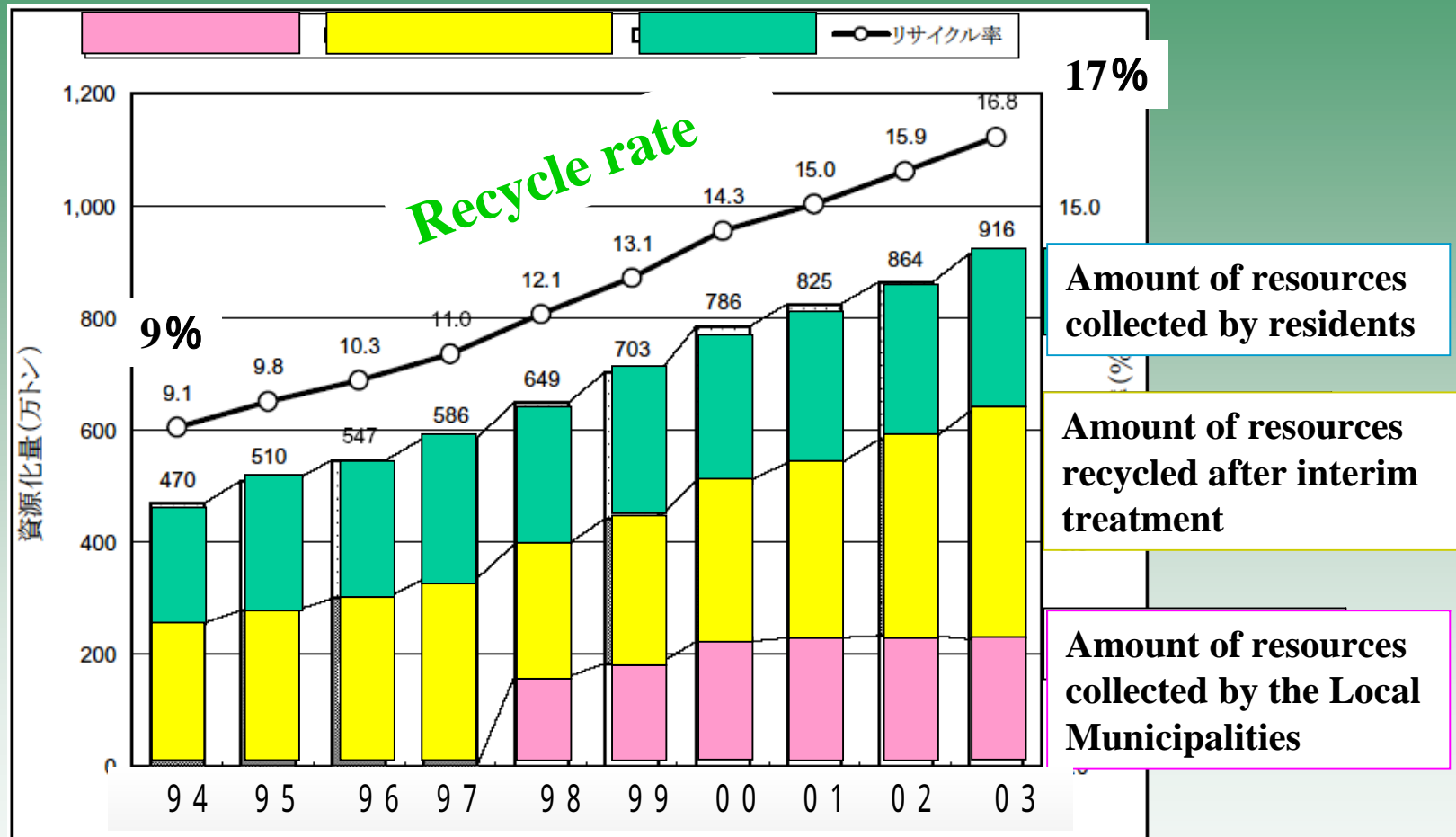
Interim treatment for Resource Recovery

Incineration

Incineration rate had increased gradually, national average was **78%**. Some of the Municipalities are over **95%**. What a Incineration-ism!!

Source:MOE , 2006.11.14 press release document

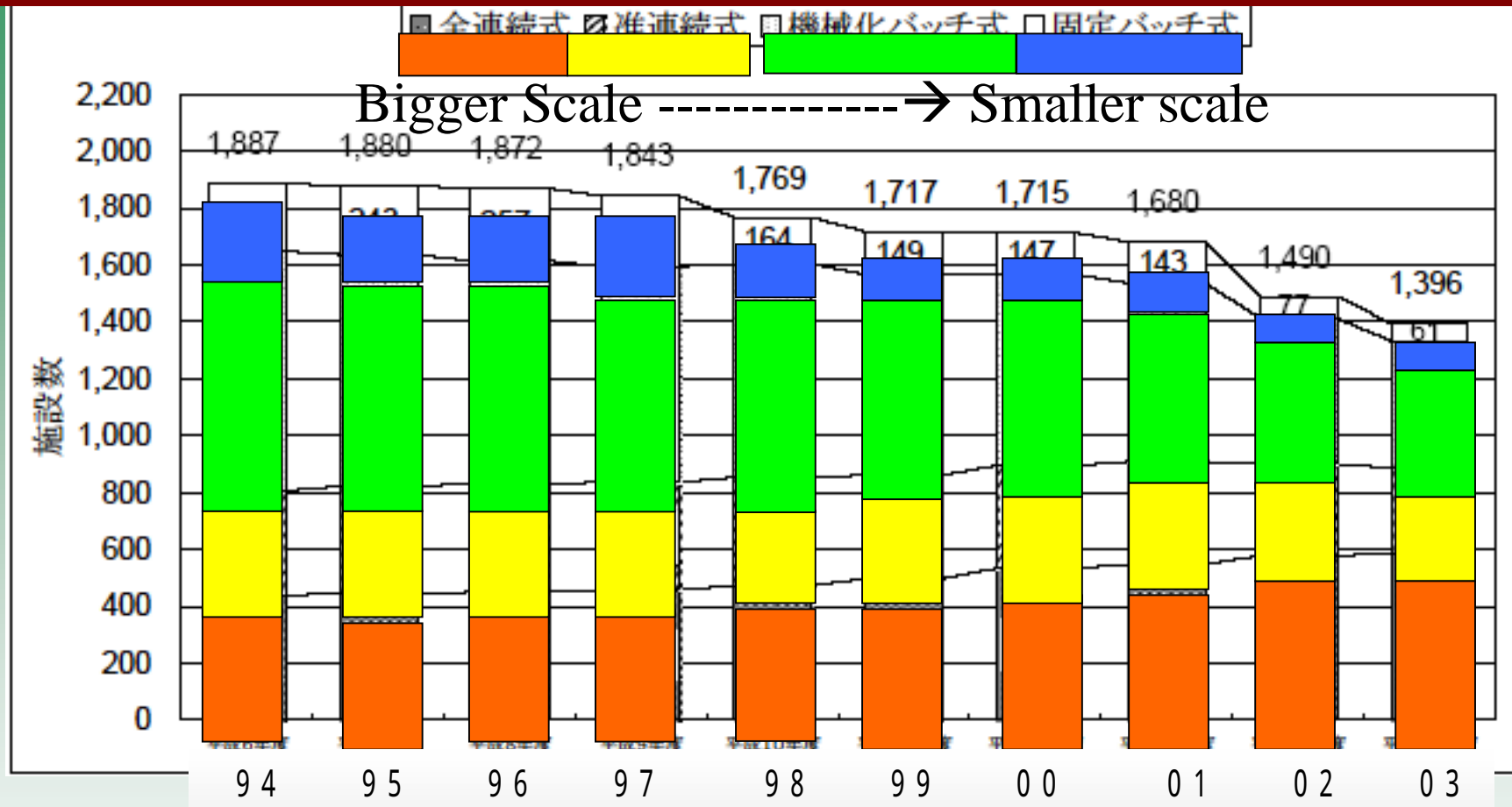
A Trend of the Recycle Rate and the Total Amount of Recycled Resources



Recycle rate had increased from **9%** to **17%** during the decade, but actually it is only **11%** diverted from the wastes.

Source:MOE , 2006.11.14 press release document

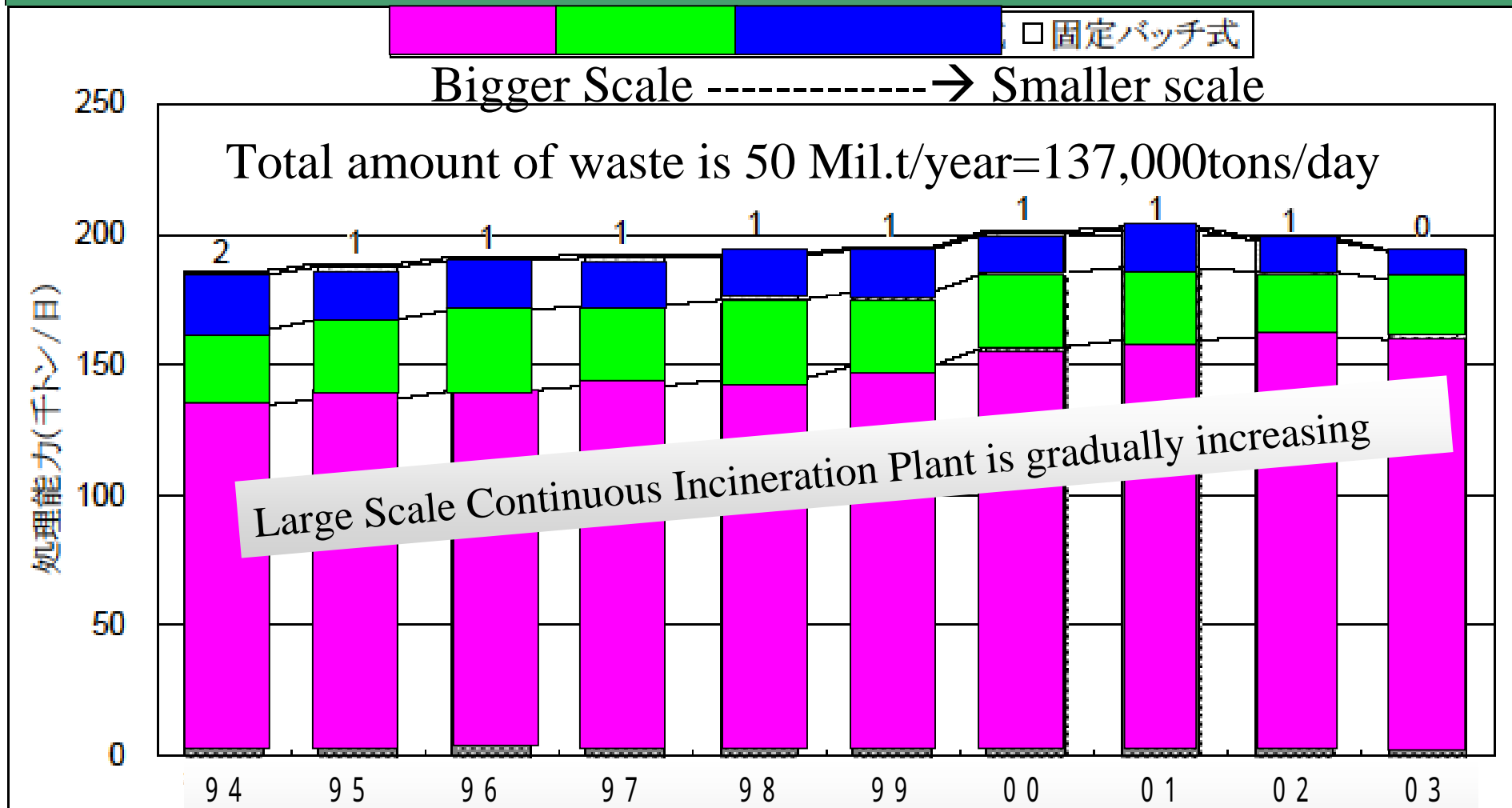
Decrease in Number of Incinerators



The number of the incinerator had decreased from **1887** to **1396** in decade. Almost **500** decrease during the decade.

Source:MOE , 2006.11.14 press release document

A Trend of the Capacity of Incinerators: Increasing

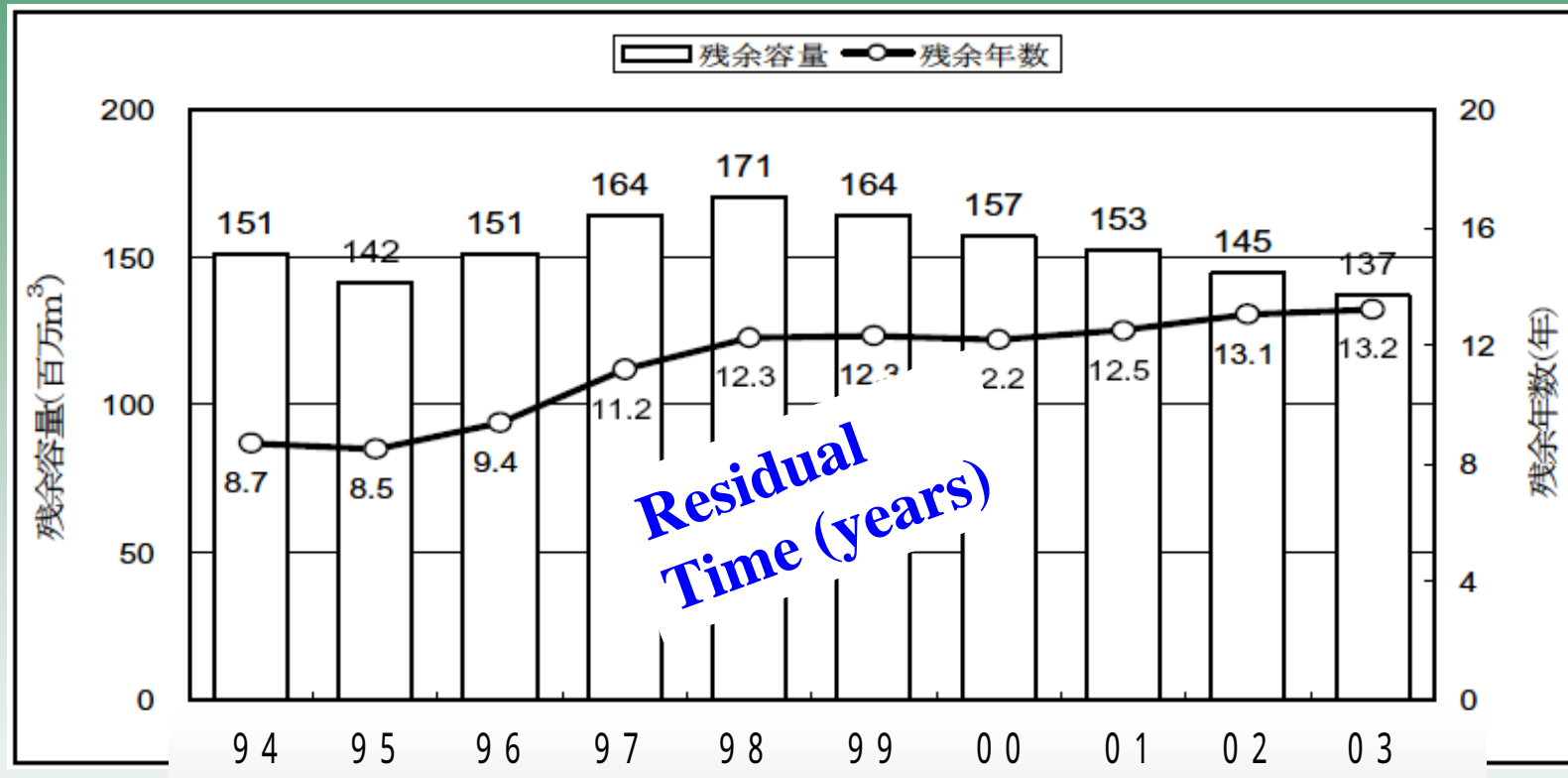


It had increased from 185 to 194 thousand tons/day during 10 years.
 It is excessive capacity compared to the waste volume.

Source:MOE , 2006.11.14 press release document

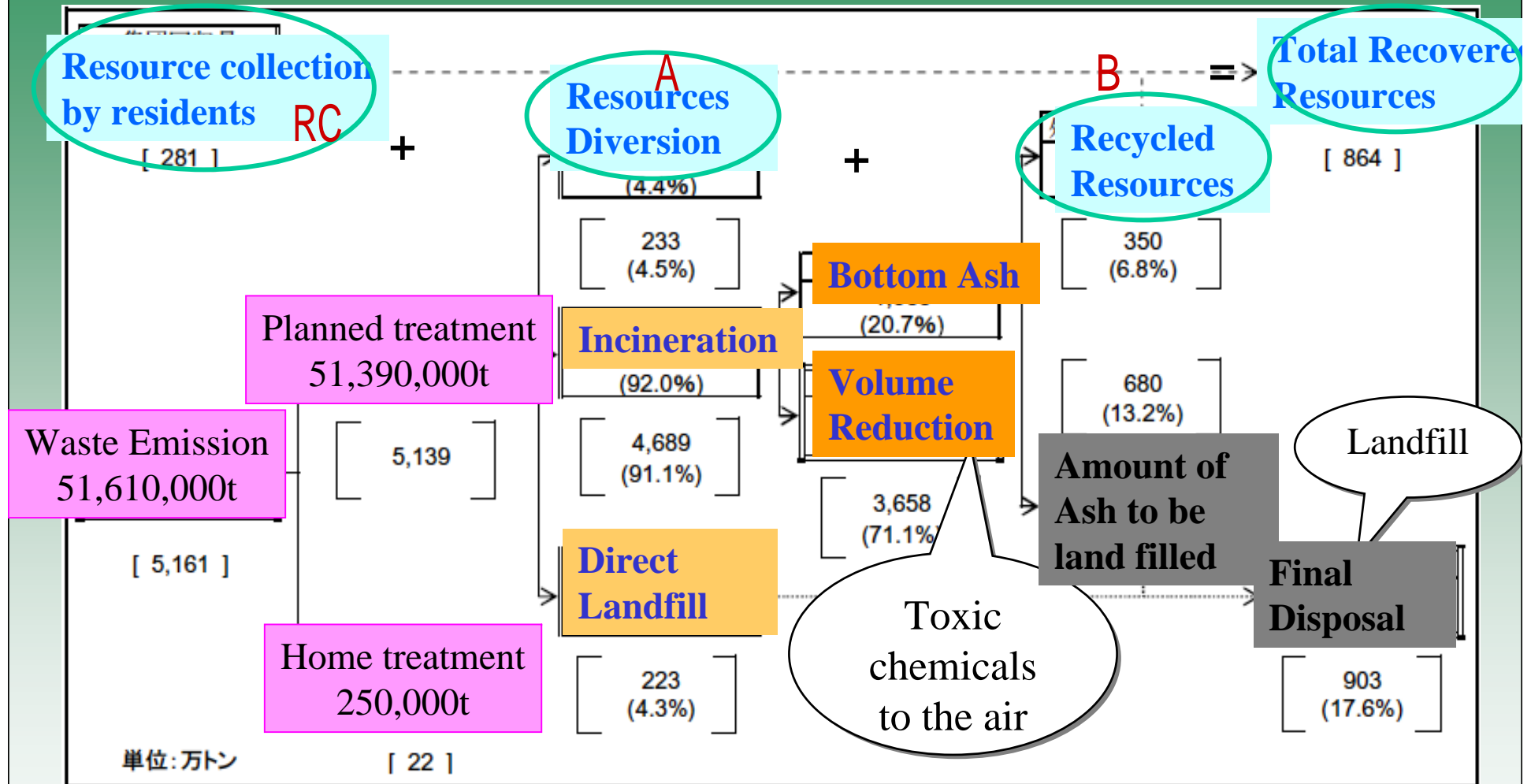
Residual Capacity and Time of Final Landfill Sites

Residual capacity of Landfill sites: 137mil.m3 in 03



Residual capacity had decrease because of the amount of bottom ash had increased. But residual time had increase gradually!

Waste Treatment Flow in Japan



Source: MOE, 2006.11.14 press release document

17% in 2003

$$\text{Recycle Rate} = \frac{A + B + RC}{\text{Total Waste Emission volume} + RC}$$

Capacity and Surplus of our Incinerators

The more we invest to build the incinerator, the more waste increase..

Performance because of regulations

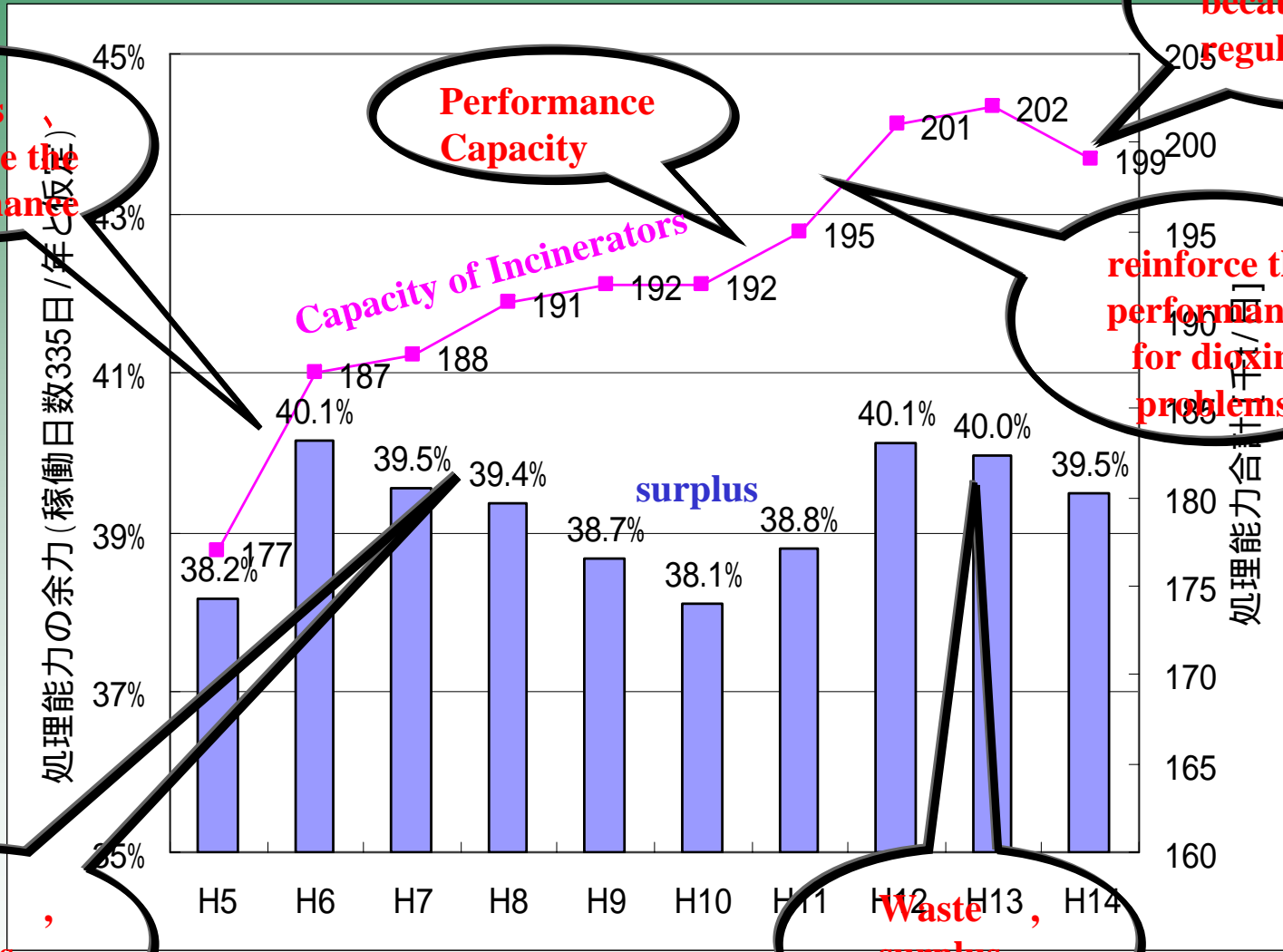
Surplus reinforce the performance

Performance Capacity

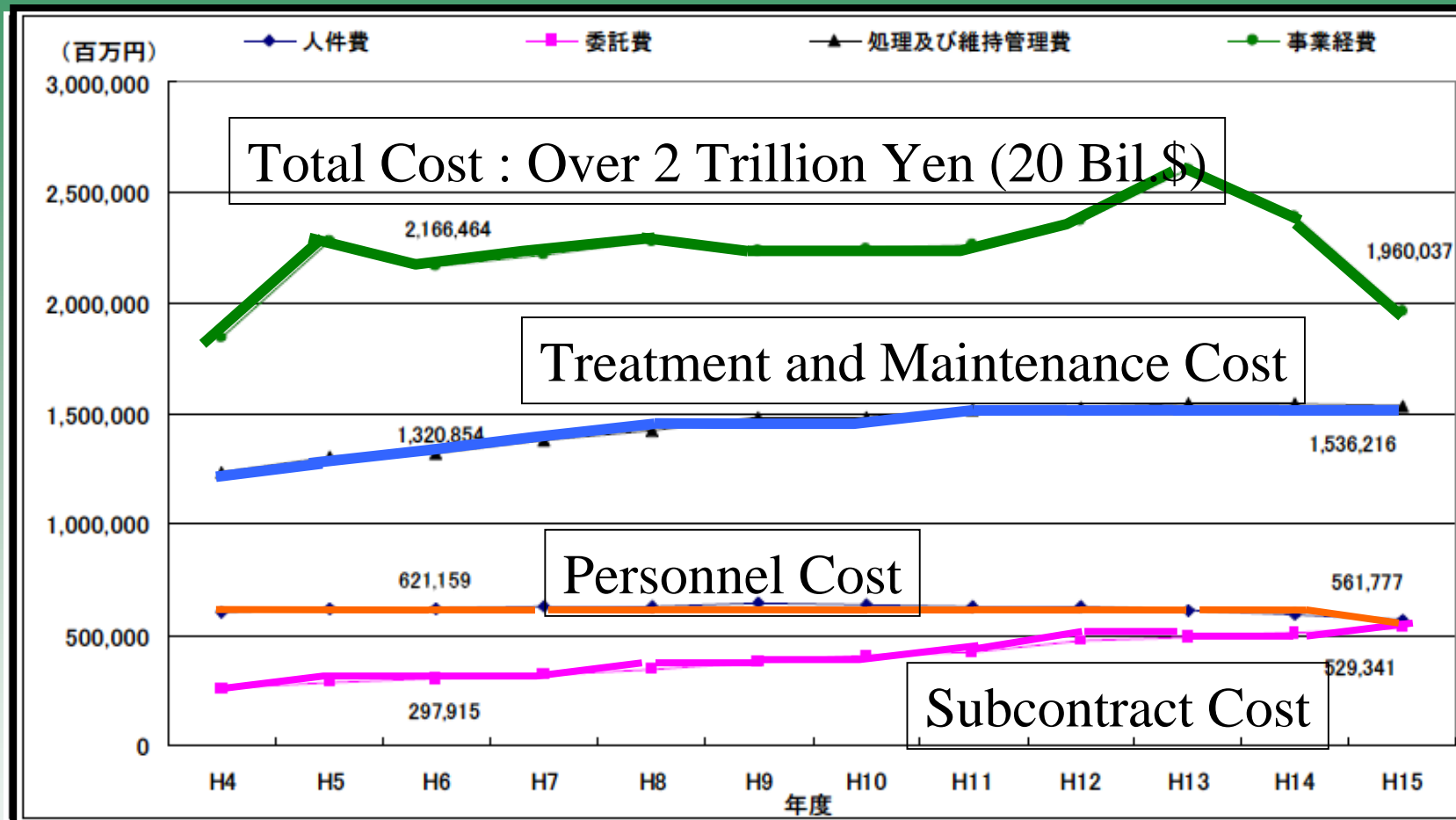
reinforce the performance for dioxin problems

Waste surplus

Waste surplus

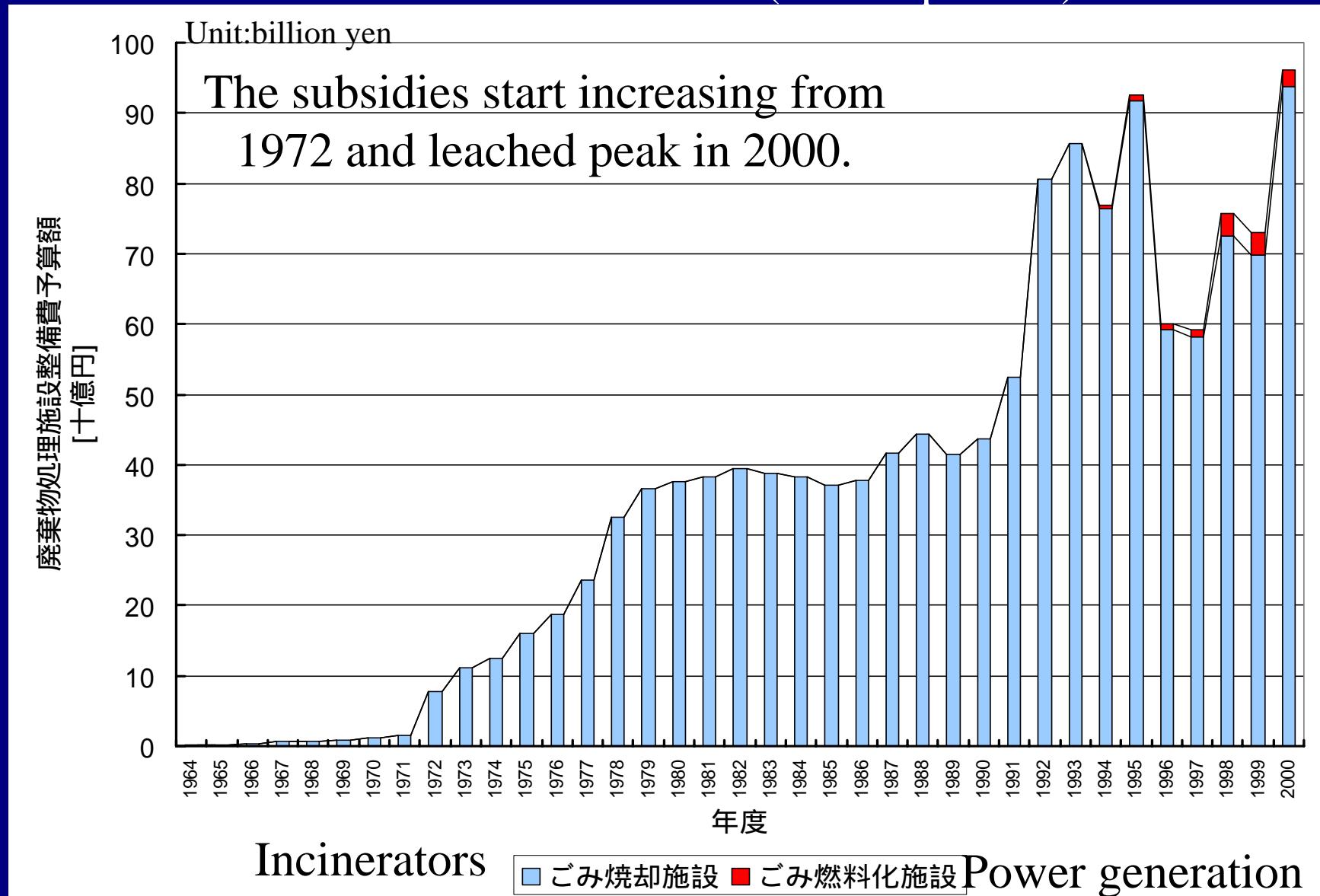


A Trend of the Average Cost of Waste Treatment



- Also the average cost of waste treatment has increased since 2002. Total cost is 2 trillion yen (C\$22bil.). The cost per head per year is almost 15-20 thousand yen(C\$333)

Increase of National Subsidies for MSW Incineration Plant Construction for Local Governments (Municipalities)



Serious problems of waste policies in Japan.

1. Government promotes policies put too much **emphasis on hardware** such as incinerators or melting furnaces(pyrolysis).
2. They just think that wastes will be generated and must be properly incinerated and land filled. (**Waste Resources**)
3. **End of pipe** → Excessive dependence on technology
4. Excessive **dependence on national subsidies** → Municipalities are subordinated to National government
5. Government is unconscious of expenses → **unfair cost burden**
6. No one takes the responsibility = the **lack of EPR, PPP principle**
7. Unconsciousness of consideration for **environmental impact**.
(Impact on Area-wide, global, next generation, eco-system)
8. On one hand government (Municipalities) actually decides policies without people's opinion; on the other, the people tend to put the problems under the government decision.
→ **Citizen Involvement, participation** is necessary.
More democratic decision making process is necessary.

Japanese Incineration
Environmental Advocacy!!

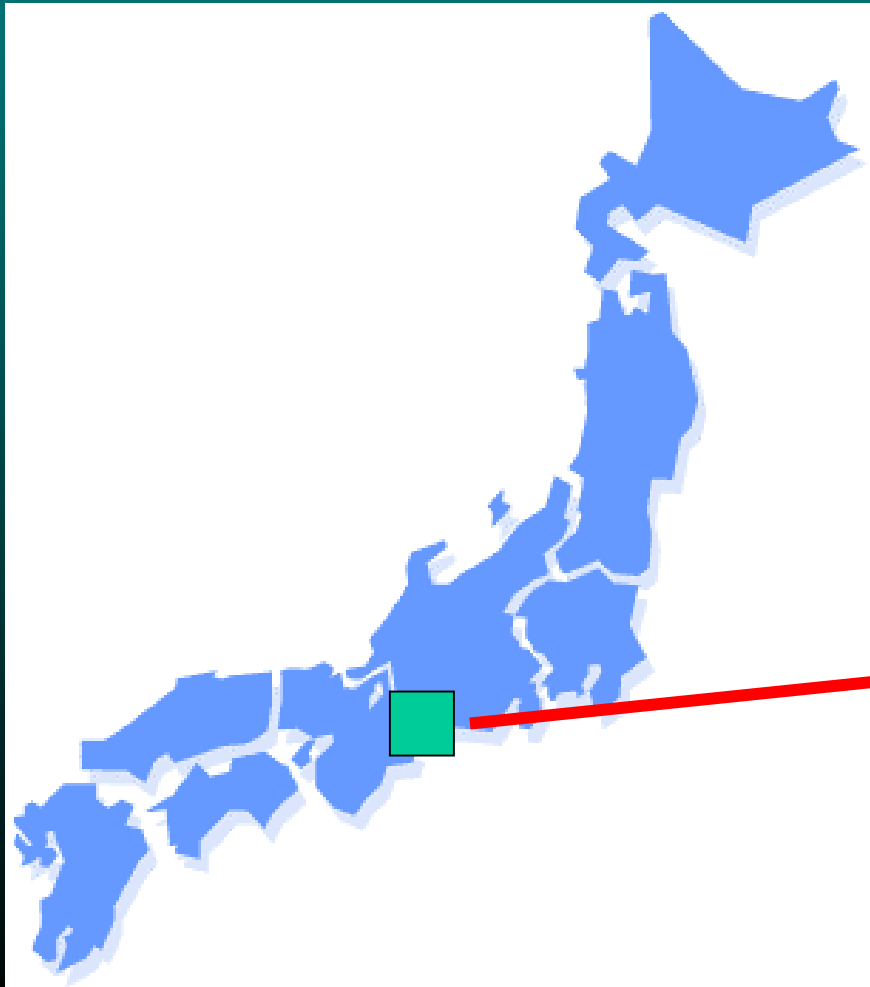
Teiichi Aoyama,

Musashi Institute of Technology

Komichi Ikeda

Environmental Research Institute Inc.

Change Waste Management Policy in Japanese Large City in Nagoya City

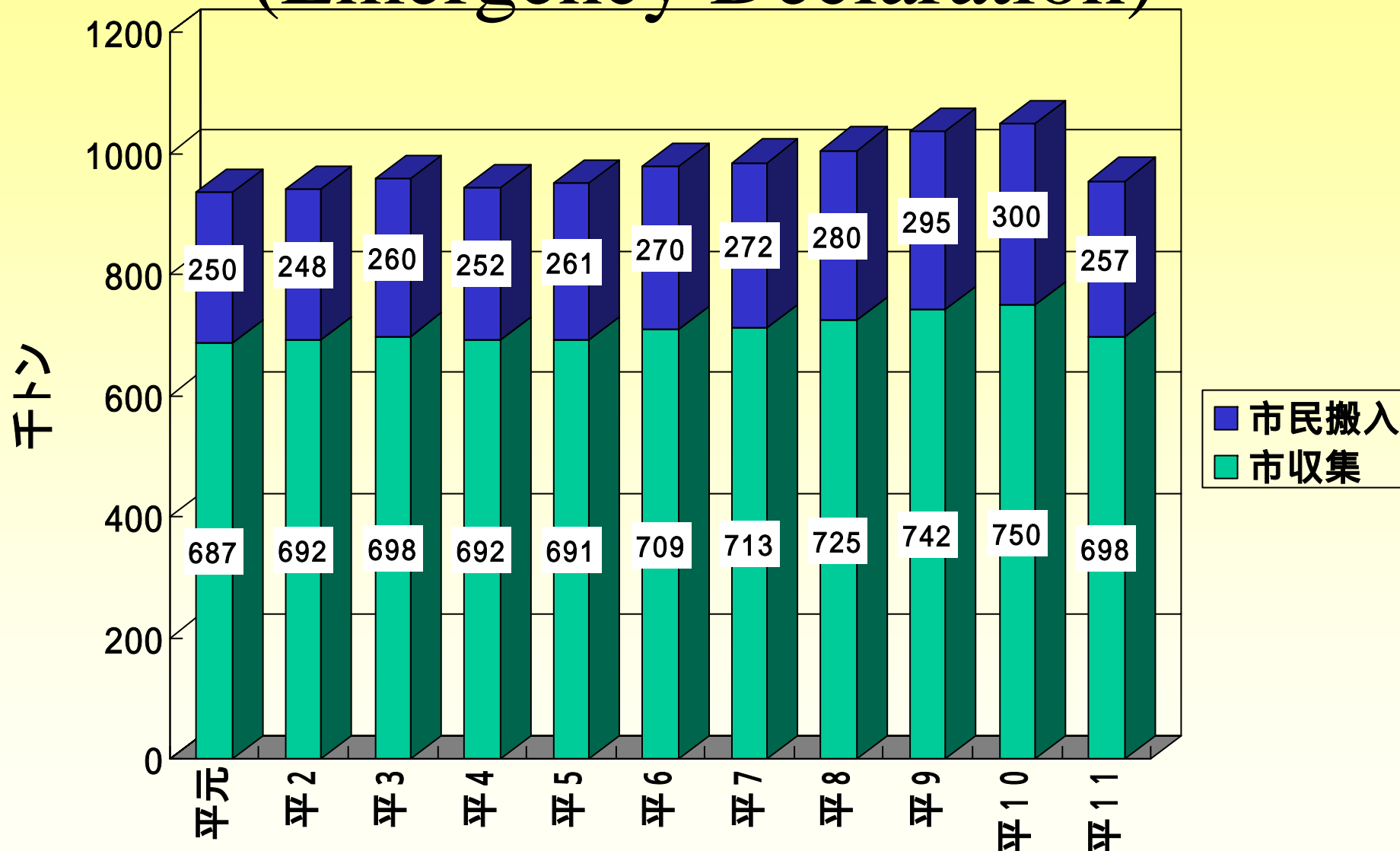


Nagoya City
Population 2.5 million



source:Environmental Research Institute, Tokyo

Epoch of Nagoya City (Emergency Declaration)



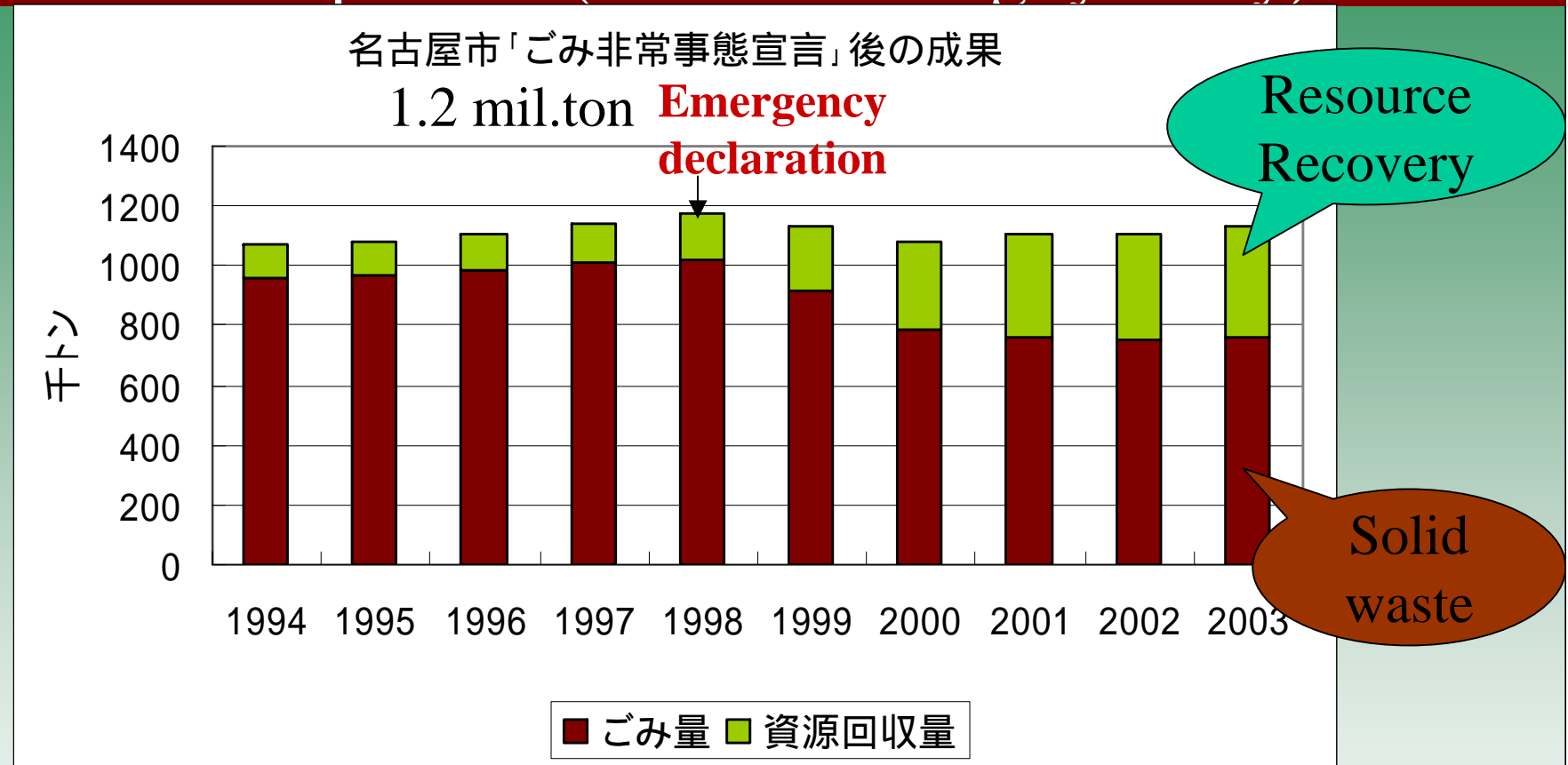
資料:名古屋市第2次一般廃棄物処理基本計画より作成

Nagoya City had to preserve the tidal flat and estuary of Nagoya Bay for Migrant and gave up the plan of Constructing new landfill site there!!



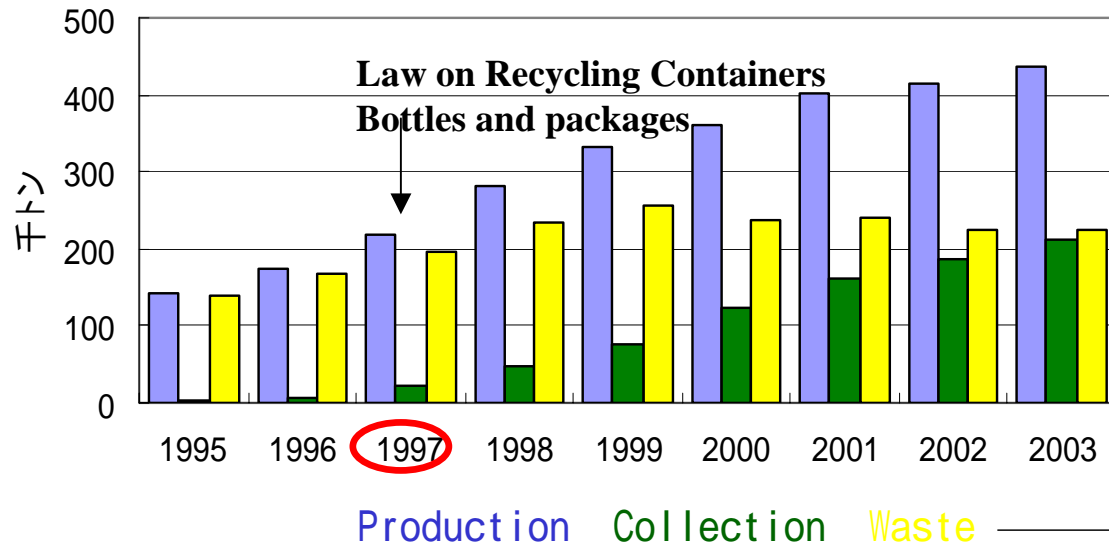
source:Environmental Research Institute, Tokyo

Financial Burden of Resource Recovery in Municipalities (in case of Nagoya City)



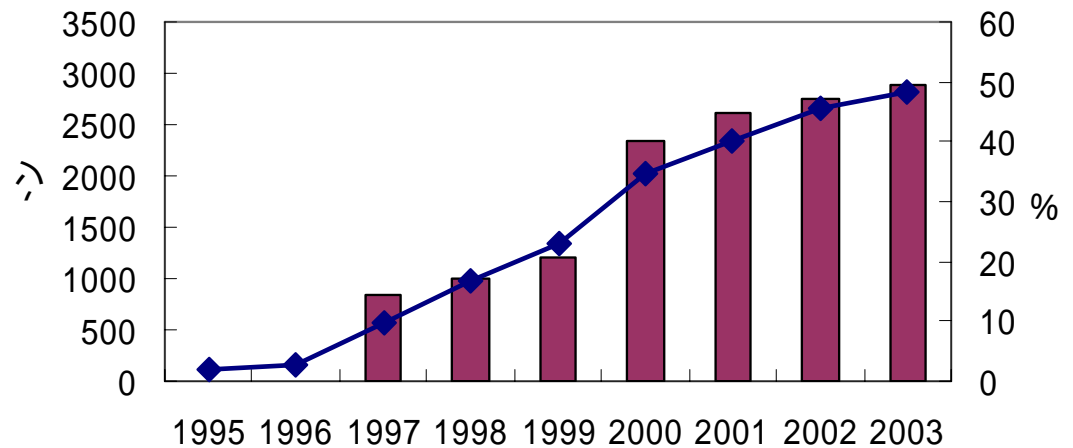
- Nagoya City declared Emergency for her solid waste treatment in 1998, because she had no additional space to dump the solid waste in Nagoya Bay.
- The emission volume of waste had decreased gradually, but on the contrary, the resource recovery increased. This makes Nagoya City serious for the financial burden for the cost of collection and storage of recovered resources.

PET Bottle Recycle in Japan



- Production of PET is increasing
- Collection of PET is increasing
- but 50% goes to waste;
Incineration or landfill

- Municipalities who collect the PET as resource have been increased, and the recovery % is also increased, but the financial burden is too heavy for them!!

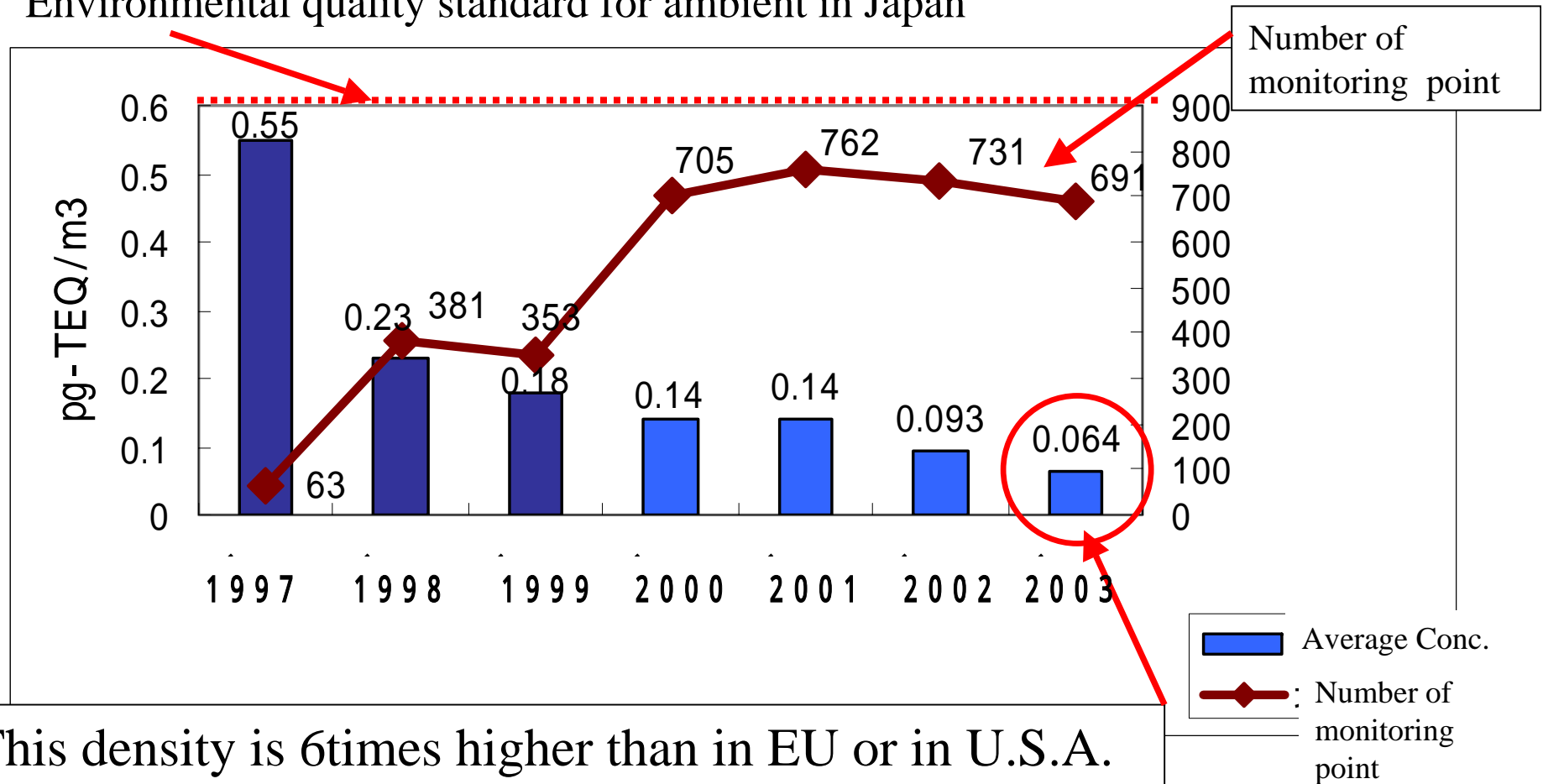


八町町集市中核主町村数
 回収率
 Municipality of PET separation % of Recovery

出典: 環境省発表 統計資料より作成 (ERI)

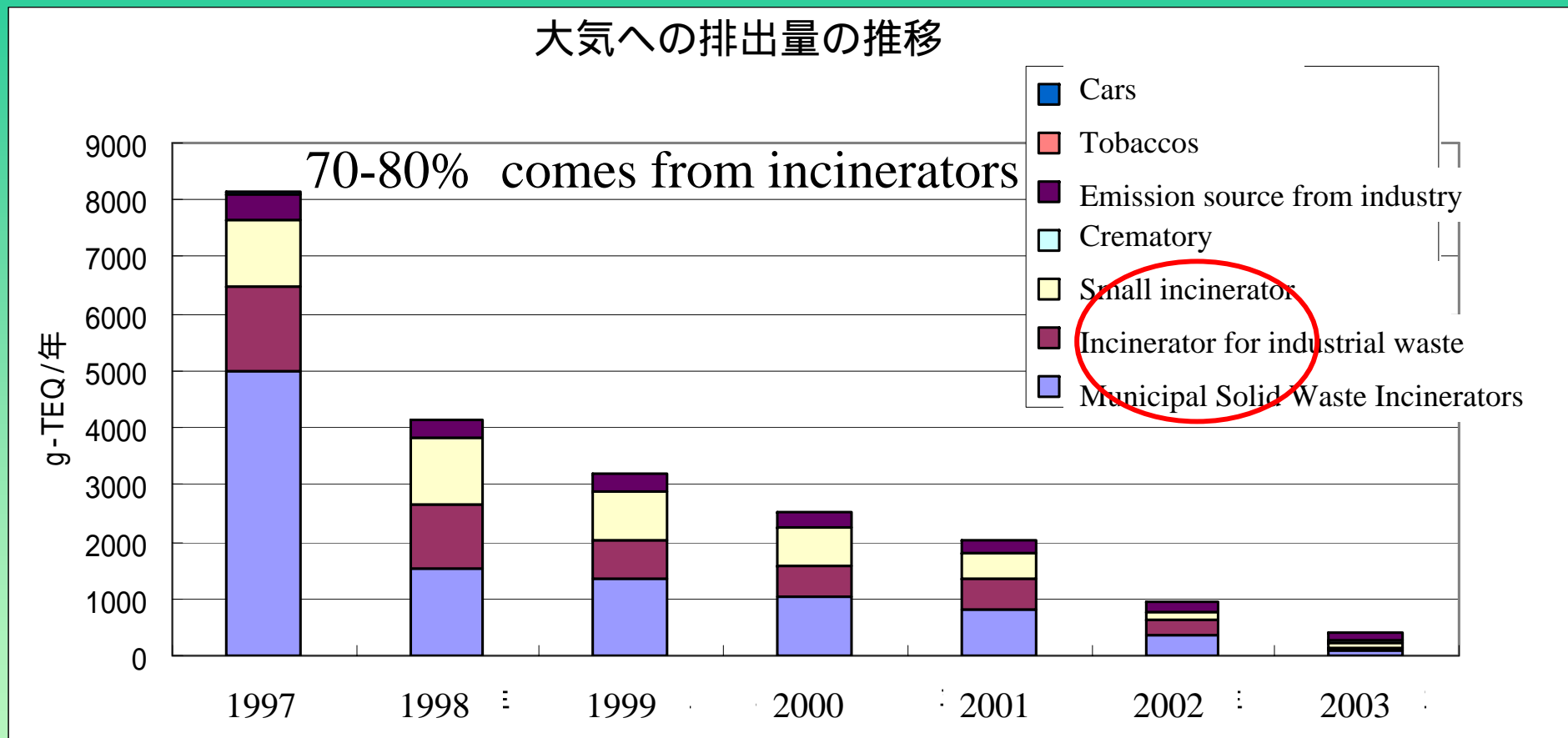
A Trend of Dioxin Concentration in the Ambient Air (Average Conc. and the number of the monitoring points)

Environmental quality standard for ambient in Japan



Source: FY 2003 Report of Dioxin Monitoring, 2004,9 Ministry of Environment

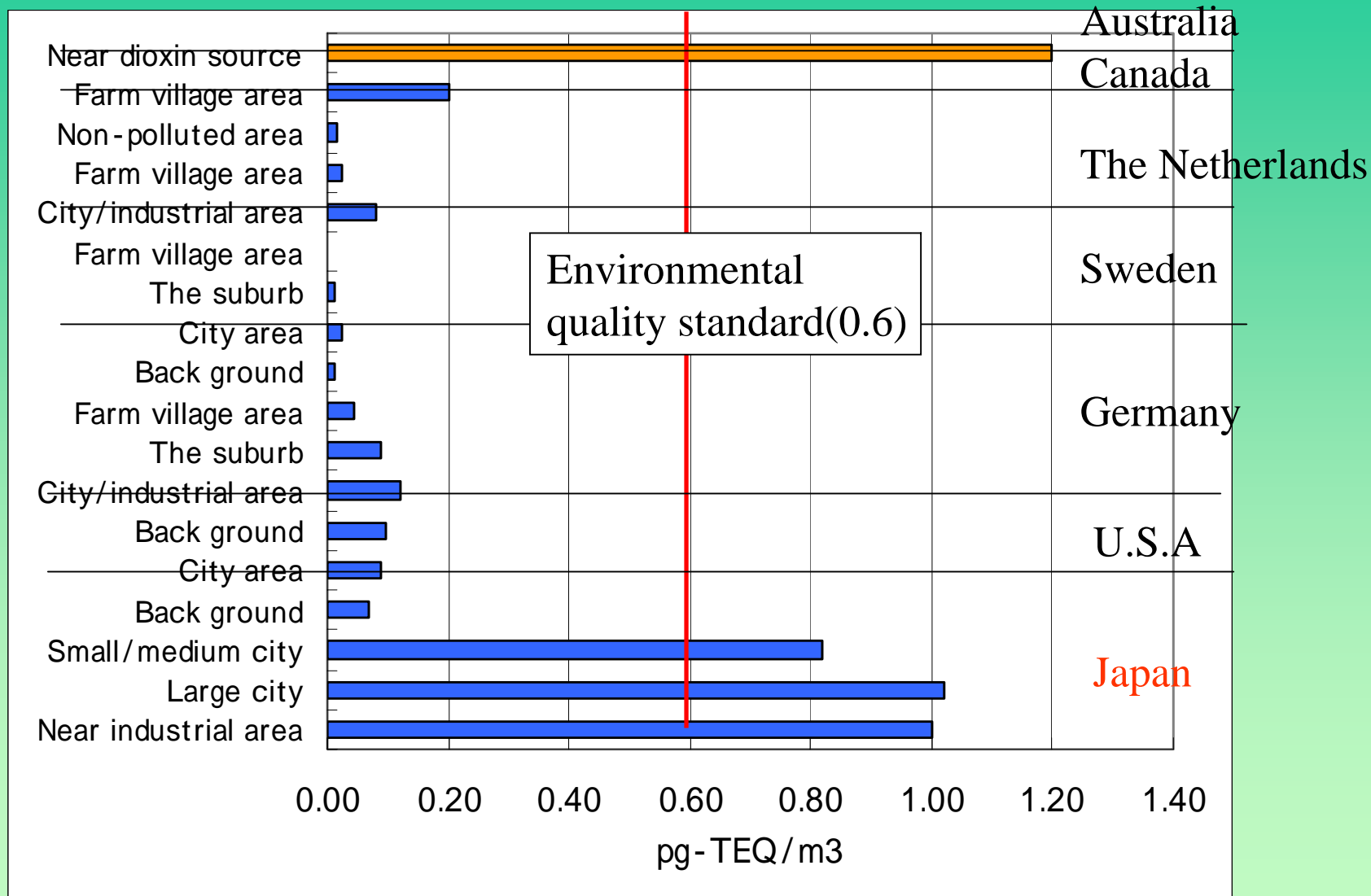
A Trend of the volume of dioxins emissions (Dioxin Emission Inventory to the Air)



Source: Dioxin Emission Inventory (Summary) 2004.9 Ministry of Environment Japan

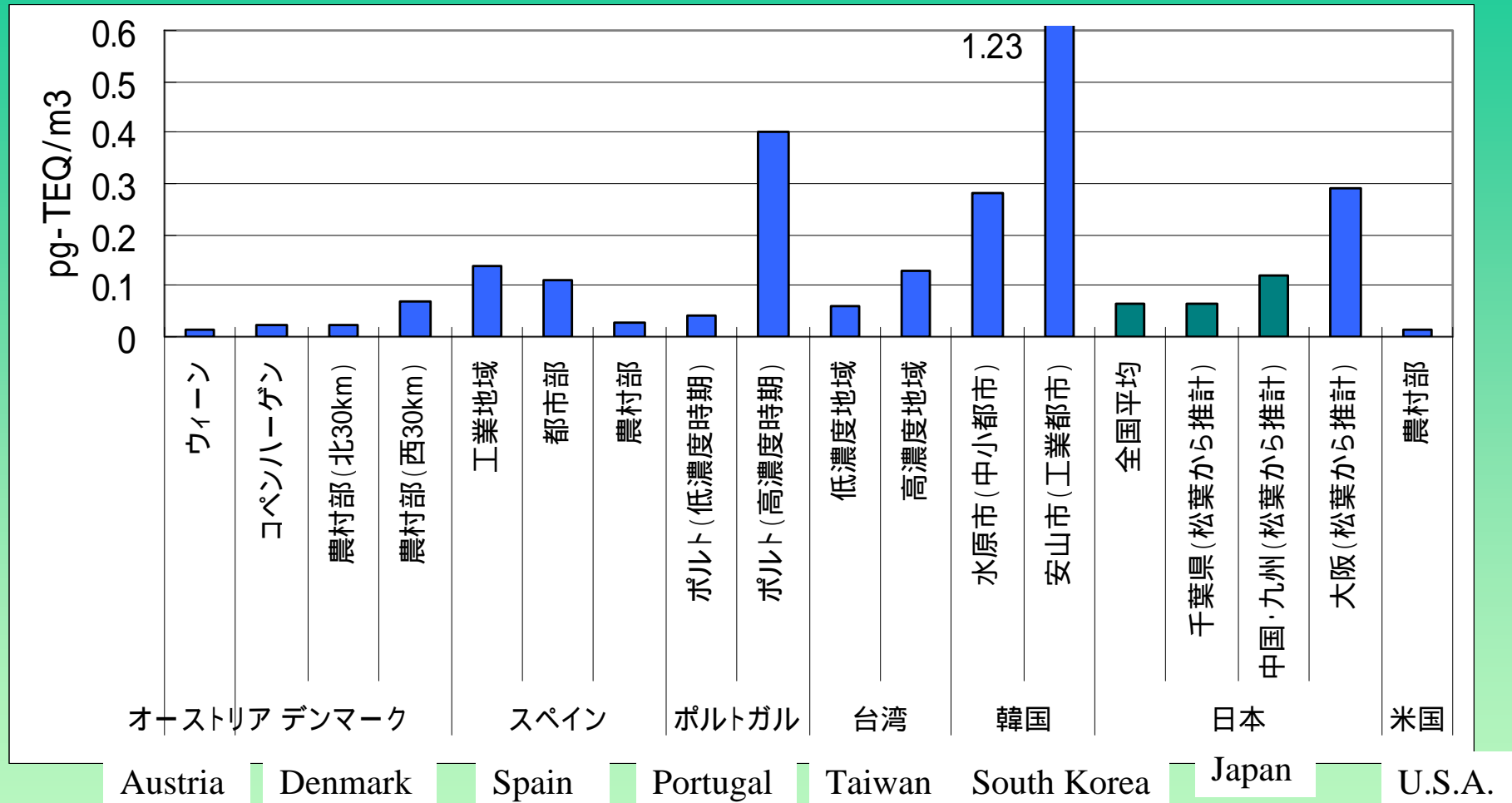
Dioxins emissions had decreased from 8kg to 400g in seven years. **But it's inferred from many problems of this data that the actual emissions is larger.**

Dioxin Concentration Levels in the Ambient Air (in 1990's)



出典：日本については、平成8年度環境庁調査結果より、諸外国はA.K.D.Liem等の論文より

Dioxin Concentration Levels in other Countries (after 2000)

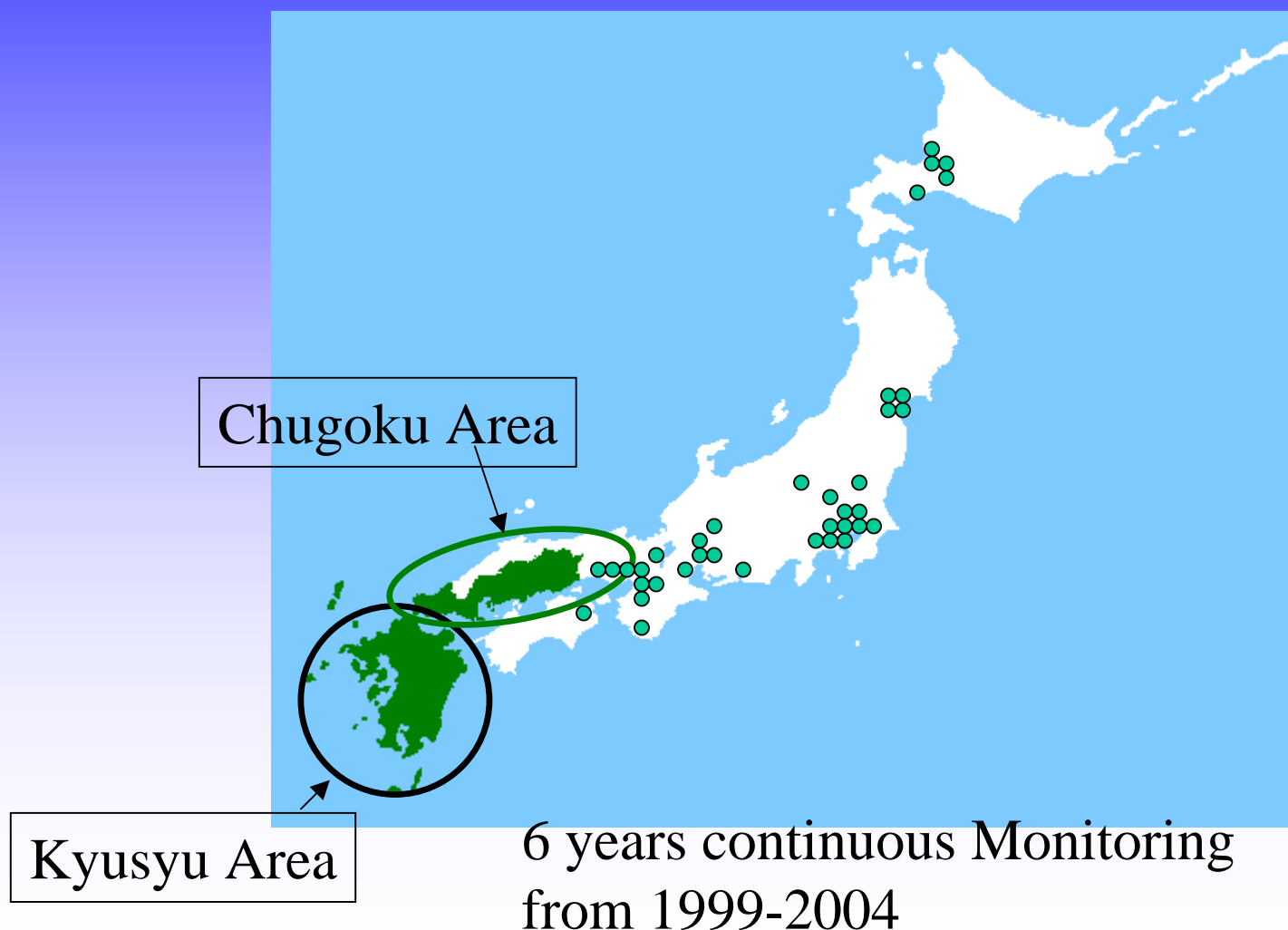


In Western city area and farm village area, the concentration level of Dioxin is **0.01 ~ 0.02pg-TEQ/m³**.

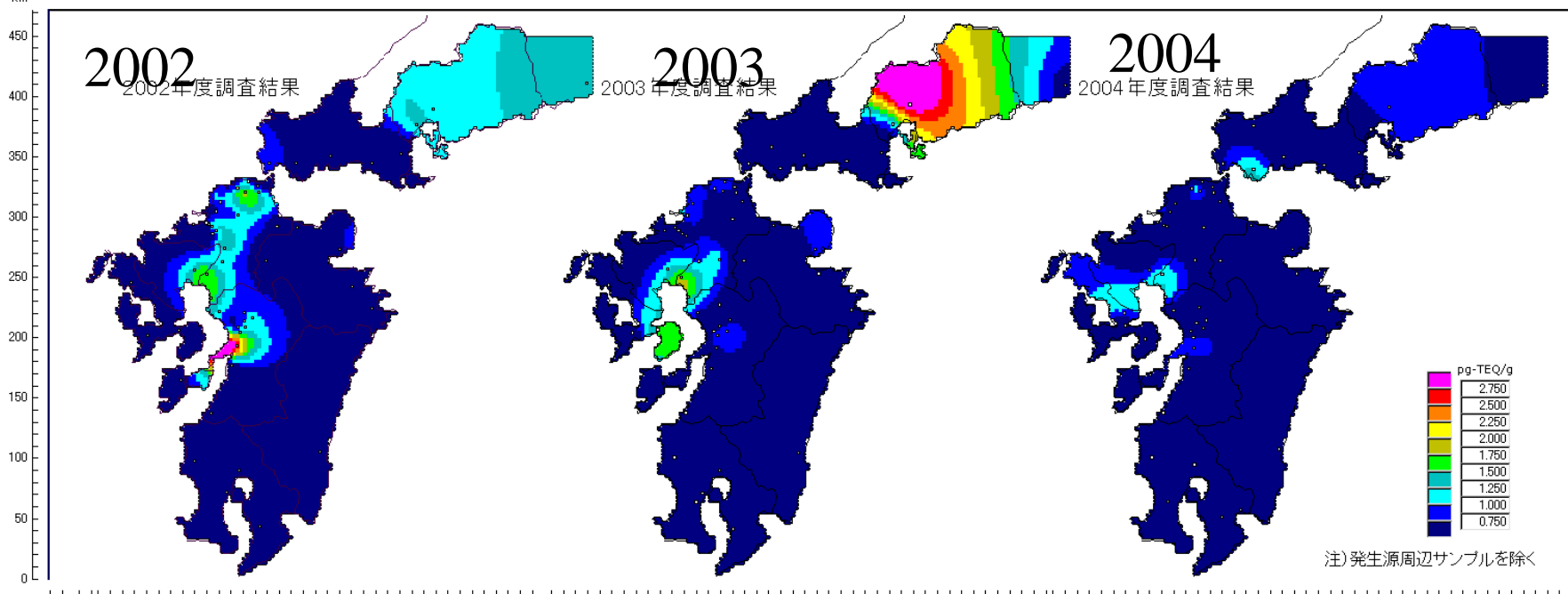
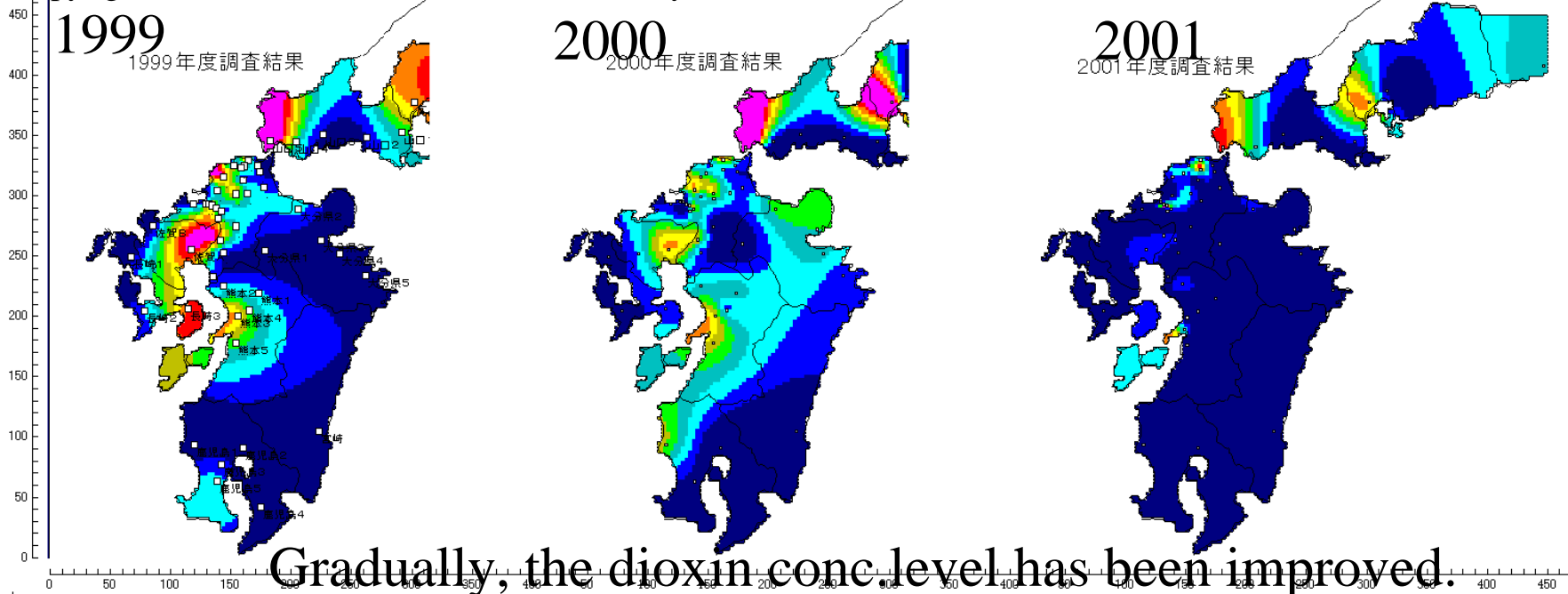
In Japan, the average con. level has reduced to **0.059pg- TEQ/m³ (2003)**.

出典: 国際ダイオキシン会議 (Dioxin2004 in Berlin) の発表論文集より作成 (ERI)

Citizen's Participatory Environmental Monitoring by Pine Needle as Bio-Monitor of Dioxin

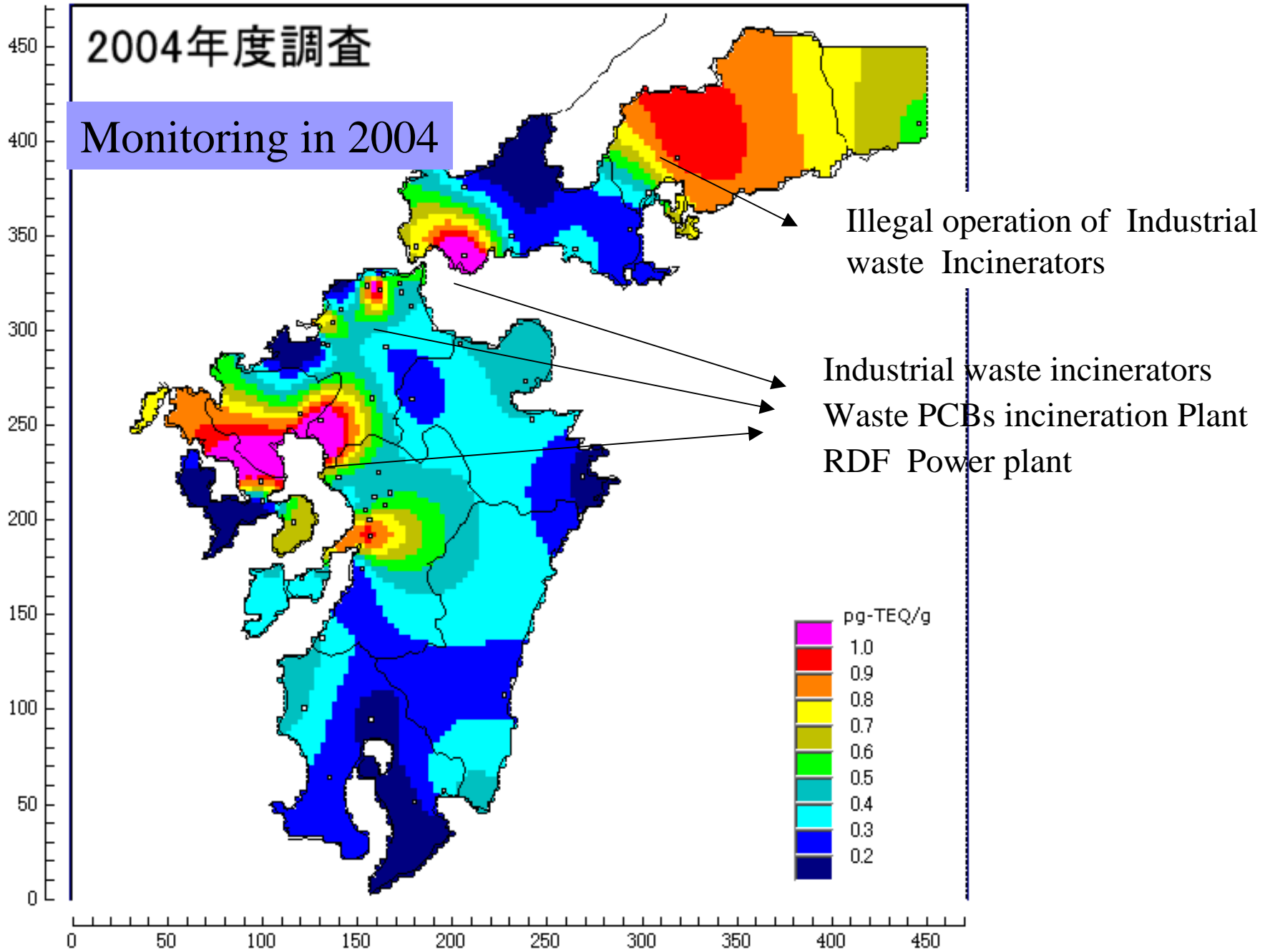


source:Environmental Research Institute, Tokyo

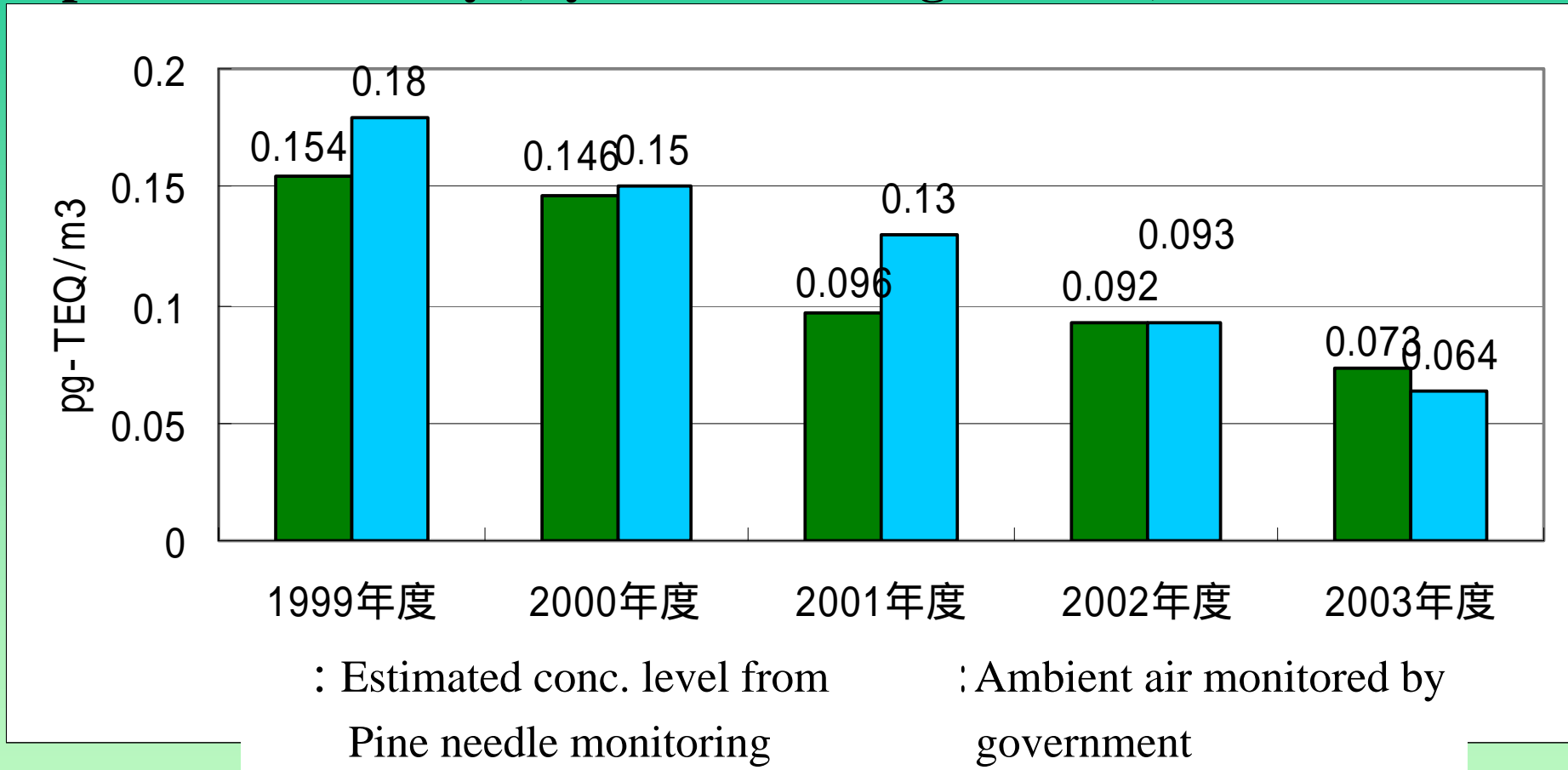


2004年度調査

Monitoring in 2004



Comparison between average dioxin conc. in ambient air measured by government and calculated conc. on the basis of pine needle survey (Kyushu and Chugoku area)

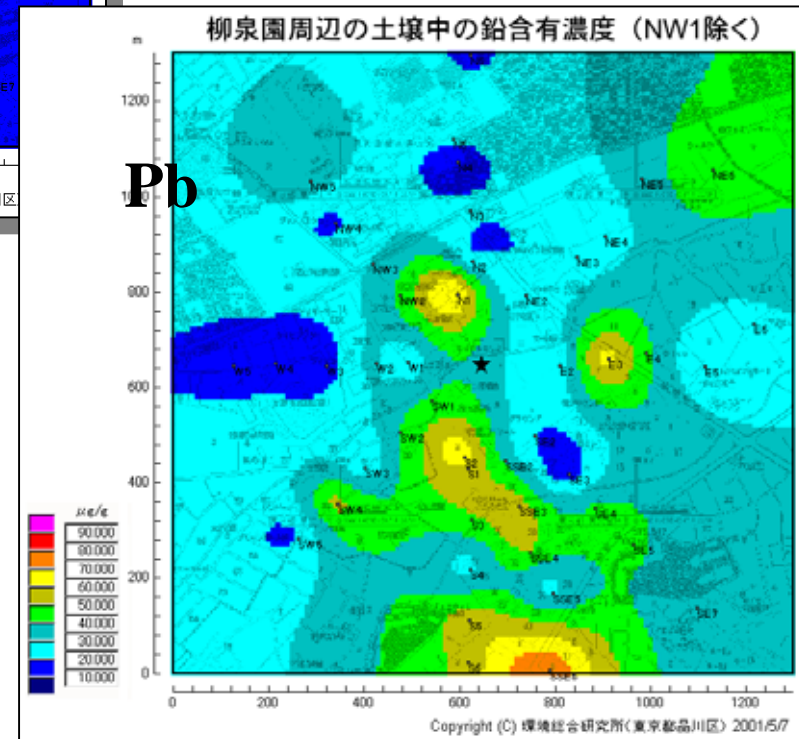
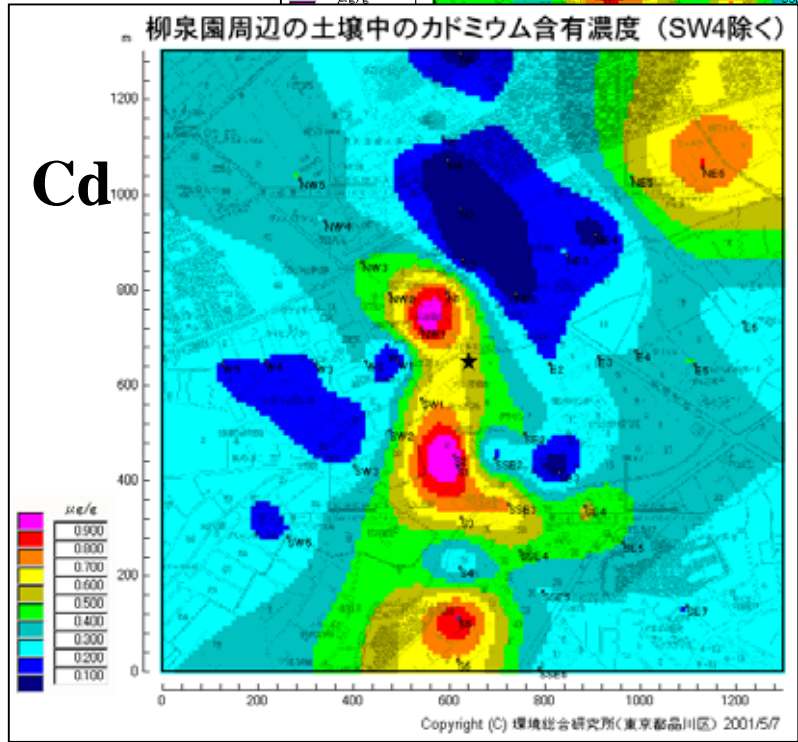
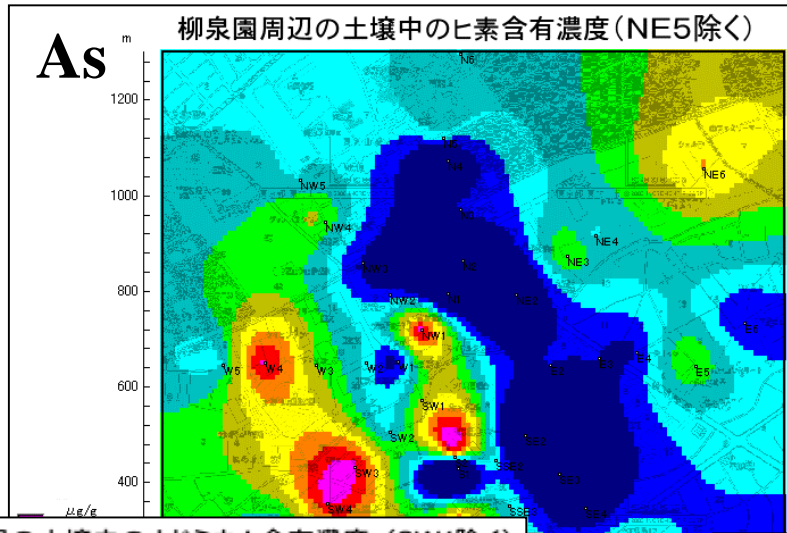


Parameters of pine needle analysis are only PCDD/PCDF. It was assumed that Co-PCB accounted for 10% of the whole.

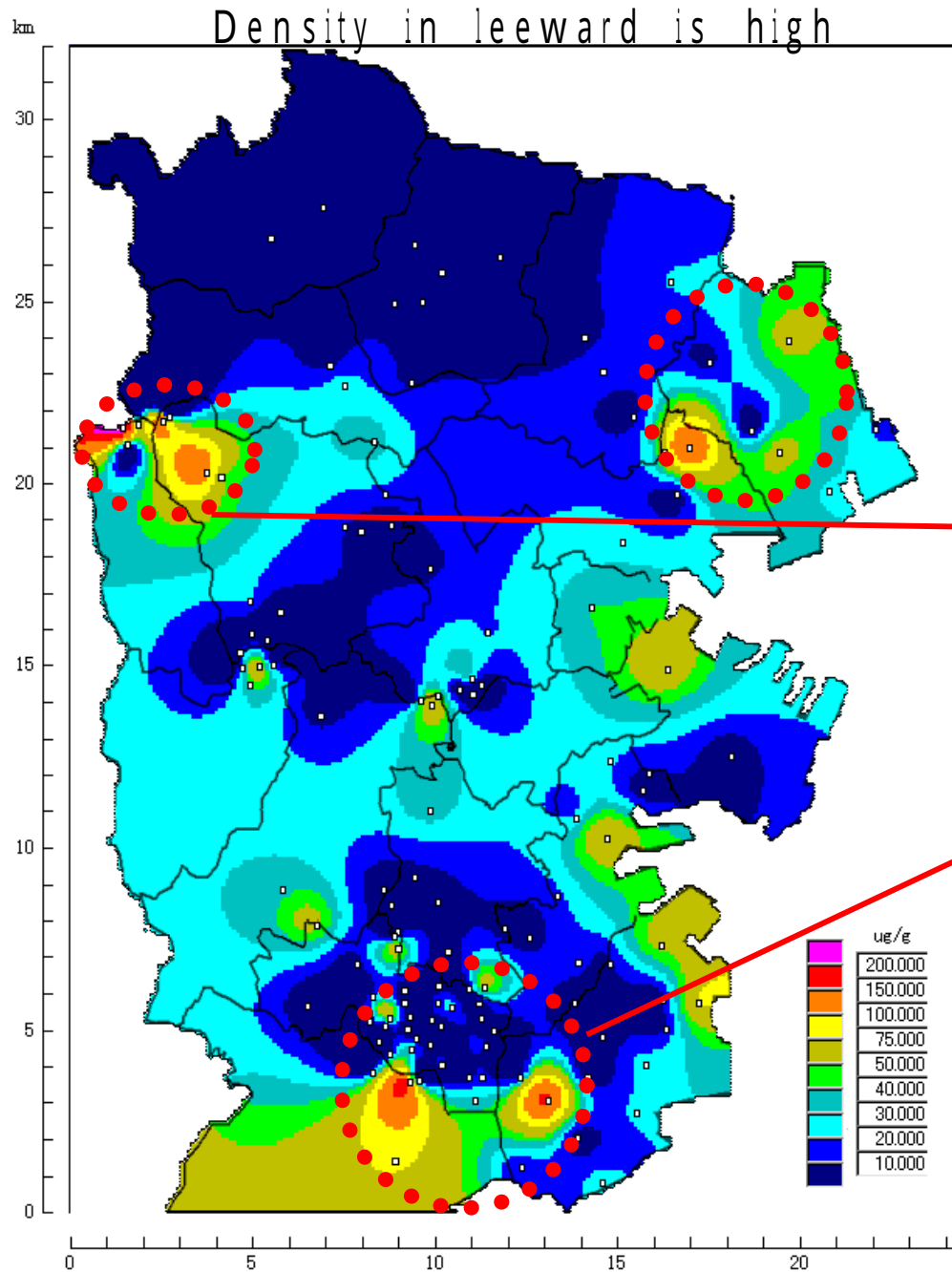
Source: FY2003 The Results of Environmental Monitoring of Dioxins, MOE, made by ERI

Copyright: Environmental Research Institute, Tokyo

Heavy Metal Soil Contamination In the Vicinity of MSW Incineration Plant



Results of Pb Contamination of Soil in Yokohama City



土壤中の鉛含有濃度 2003/10/17 Copyright(C) 環境総合研究所(東京都品川区)

Vicinity of Hazardous Industrial Waste Incinerators

Residential Areas close to 5 large MSW Incinerators of rather old type (Mostly down stream areas)

Areas of $>50 \mu / g$ are 23 points. Among which 11 areas are near the Incinerator or Final Disposal site or electric code recycling facility.

Dioxin Concentration Levels in Ambient Air had decreased !

However, the state of waste has not changed dramatically.

1 The waste has been incinerated in decade.

- The amount of waste has not decrease.
- Carbon dioxide and hazardous substance have emitted by Incineration in order to reduce the volume of garbage.
- Total amount of final disposal (landfill) has decrease, but that of bottom ash has not decrease so much. (13% reduction in decade)

2 Recycle rate has not increased so much.

- Recycle rate is only 11%.
- Including the amount of collection by residents ,recycle rate had increased from 9% to 17% only.

3 The number of incinerator had decreased under Law of controlling Dioxins (Emission regulations etc.).

- Although the number of incinerators had decreased by 500 in decade, the amount of waste had not decreased. It was a vicious circle ~ The capacity of the incinerator is raised → The amount of waste increases → Again the incinerator is improved...

Japanese Incineration

Meet Halifax and Nova Scotia!!

Teiichi Aoyama,

Musashi Institute of Technology

Komichi Ikeda

Environmental Research Institute Inc.



Feb. 2003



Source:Environmental Research Institute, Tokyo

Feb. 2003



Source:Environmental Research Institute, Tokyo

Near Mahone Bay

Feb. 2003



Near Mahone Bay



Peggy's Cove

Source: Environmental Research Institute, Tokyo

Aug. 2003



Nova Scotia Solid Waste Management Conference
in **Canadian Embassy** Tokyo

Source:Environmental Research Institute, Tokyo

カナダ・ノバスコシア州政府から環境総合研究所に送られた現地視察団歓迎ブランク

Sep. 2003



↑
Environmental Research Institute



ノバスコシア州政府環境労働局長官
Kerry Morash氏からブランクを受ける
池田こみち環境総合研究所副所長



カナダ連邦政府外交経済省
環境大使のGilbert Paraneit氏とともに
ハリファックス市シタデルのレセプションで



以下は、ハリファックス市のシタデル。
現在、カナダ、国立公園局の歴史的遺産



以下はシタデルのぬかがある
レセプション会場



Sep. 2003



歓迎レセプション会場
となったシタデル

Source:Environmental Research Institute, Tokyo



Sep. 2003



Tire Recycle Facility

Source: Environmental Research Institute, Tokyo

Sep . 2003



Nova Scotia – Japan
NGO Symposium
in Halifax



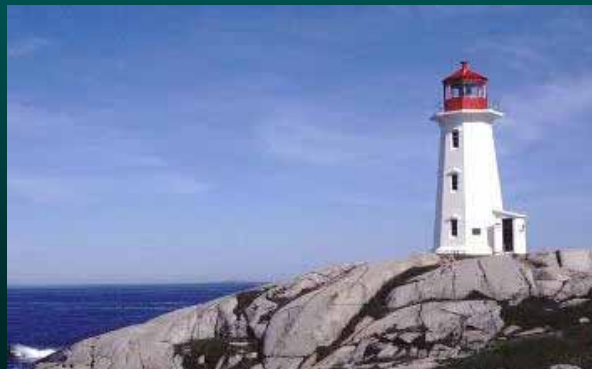
Source:Environmental Research Institute, Tokyo

Sep. 2003



Paper Recycle Factory

Source: Environmental Research Institute, Tokyo



Weekend sightseeing

Source: Environmental Research Institute, Tokyo

Sep. 2003



世界遺産都市
World Heritage Village
Lunenburg Nova Scotia



Source:Environmental Research Institute, Tokyo

発生抑制・「脱」焼却・「脱」埋立による循環型社会構築



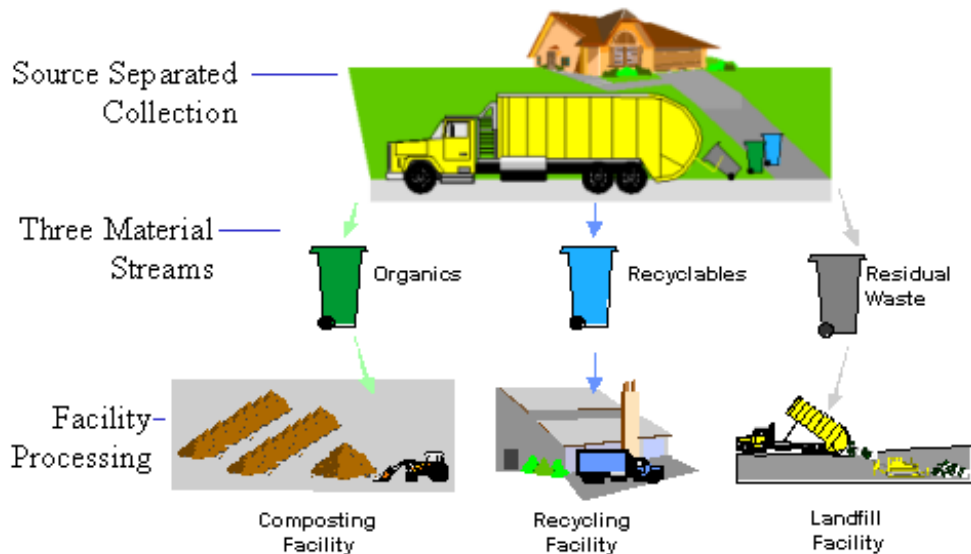
21世紀のあるべき戦略
 戦略目標: 廃棄物資源化

廃棄物 → 資源化

Waste → Resources



MAXIMUM WASTE DIVERSION SYSTEM



出典: ノバスコシア州政府 Barry氏パワーポイント



カナダ・ノバスコシア州への現地視察 2003.2-3,8-9

環境総合研究所・武蔵工大青山研究室

Research Pre-meeting in Environmental Institute Sep . 2005



Source:Environmental Research Institute, Tokyo

Pre-meeting in Aoyama Labo. of University

Sep. 2005



Source:Environmental Research Institute, Tokyo

Sep. 2005



RRFB in Valley
Nova Scotia

Source: Environmental Research Institute, Tokyo

Sep . 2005



**Chartered Bus run over
1000km in Nova Scotia
during few days.**



Source:Environmental Research Institute, Tokyo

Sep . 2005



Composting Facility In Halifax

Source:Environmental Research Institute, Tokyo

Sep. 2005



MRF

Source:Environmental Research Institute, Tokyo

Sep . 2005



Valley Transportation Facility

Source: Environmental Research Institute, Tokyo

Sep . 2005



Paint Facility

Source:Environmental Research Institute, Tokyo

Sep . 2005



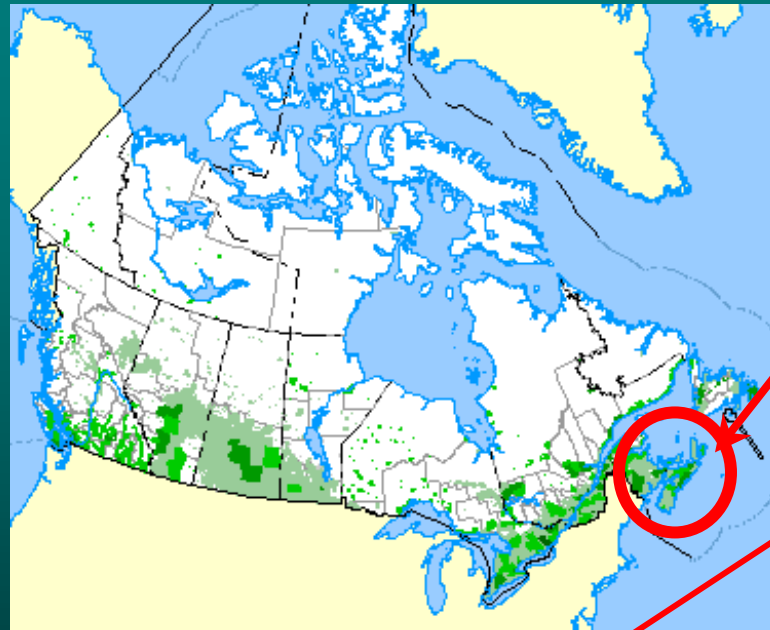
Lunenburg in Weekend

Source:Environmental Research Institute, Tokyo

地方分権

HALIFAX
REGIONAL MUNICIPALITY

NOVA SCOTIA
CANADA

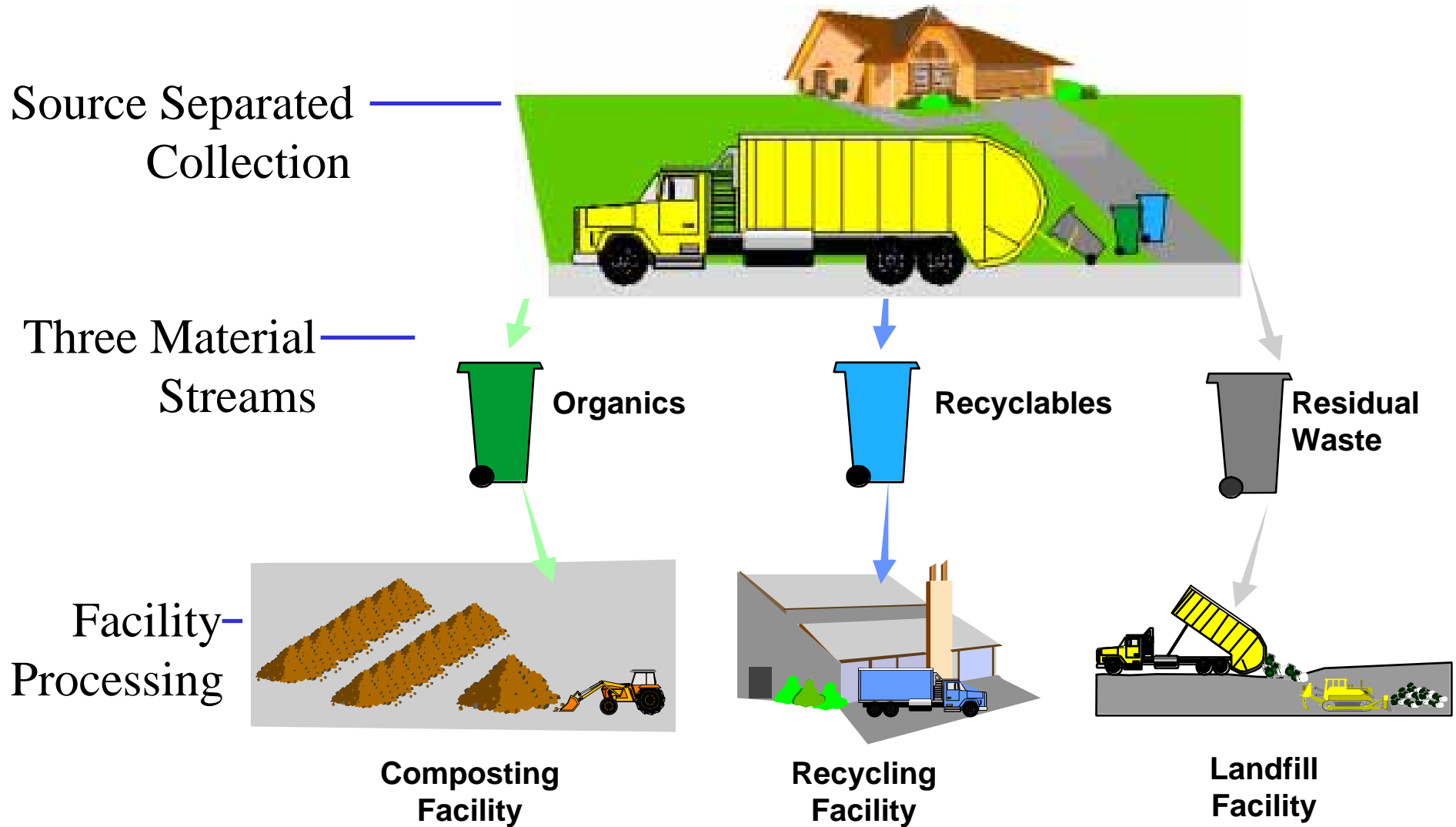


カナダ (連邦国家)
プロビンス (州)
ノバスコシア州
基礎自治体 (市町村)
ハリファックス市



Nova Scotia の由来・意味
Nova = New
Scotia = Scotland
スコットランドから移住した人がつくった国 (州)

MAXIMUM WASTE DIVERSION SYSTEM



出典：ノバスコシア州政府 Barry氏パワーポイント

Importance of Environmental Education

環境学習



Source: Environmental Research Institute, Tokyo

Japanese Incineration
It's Alternative Vision

Teiichi Aoyama,

Musashi Institute of Technology

Komichi Ikeda

Environmental Research Institute Inc.

The future challenges – waste problems

- Government try to **promote charging(a tax)** on the MSW treatment. But the effect for waste reduction is not sure.
- Government try to **promote incineration of plastic waste** and to popularize the thermal recycling(thermal recovery). But the risk of plastic incineration has not assessed enough.
- Government revised the law that allows the MSW to be incinerated together with the industrial waste. But the risk of **mix incineration** was not considered.(Increase of Risk)
- How about the **hazardous substances** (especially heavy metals, PAHs etc.) exhausted from the melting furnaces (Pyrolysis) increasing all over Japan?
- The incineration condition is to be worsened as mentioned, but the **monitoring of the emission source** (incinerators) will not be done sufficiently.

The future challenges – waste policies

- To make systems for stronger and effective EPR
- To revise Law for Promotion of Sorted Collection and Recycling of Containers and Packaging.
- To make the laws related to recycling function effectively.
- Not to increase the financial burden of Municipality caused by waste collection and resource recycling.
- To power up the autonomy of each Municipality as an independent local government and to promote own waste policies. Not dependent too much on subsidies.
- To ascertain that a slag from melting furnaces and eco-cement facilities can be used effectually.

The Sufficient Observation of Dioxins

< observation and regulation of emission source >

It's important to strengthen observation and regulation of hazardous substances from emission gas.

Concerning the measurement of dioxins in emission gas, government had introduced an easier method into the official method.

But, hereafter, it is feared to increase the dioxin concentration in the air because of incineration (melting) of plastics and industrial waste.

The measurement of hazardous substances in emission should be done more precisely (continuously) and fairly.

Distinctions between the waste policy of [H] type and [L] type

Type of Japan · H

Centralized

(Municipalities depend on central government and their subsidy)

High Technology

-Uncertainty, complex

High Cost

-Unfair bidding (huddle)

High Impact

for environment &
for financial

Type of ZW countries : L

Local :

(Municipalities do not depend on central government and their subsidy)

Low Tech

Create employments and
Promote eco-businesses

Low Cost

Low Impact

Source:Environmental Research Institute, Tokyo



Ministerial Conference on the 3R Initiative

Tokyo, April 28 - 30, 2005



The Ministerial Conference on the 3R Initiative is a starting point to formally launch the 3R Initiative which

Participation in Ministerial Conference in the 3R Initiative. (2005.4.28-30)

Minister of Environment



From Nova Scotia, Canada, Mr.G.McIellan (the Department of Environment and Labor, NS)took part in this conference and gave presentation.

Source:Environmental Research Institute, Tokyo



Discussion with participants from other countries.

The right side : a member of the Ministry of Environment in Thailand.

From the left side..
America : Mr.Scot in charge of industrial waste recycle
Japan : Komichi Ikeda (ERI)
Canada : Mr.Gerard from Nova Scotia
Canada : Mr.Mike(the Ministry of Natural Resources)
Canada : Mr.Dennis(the Ministry of Environment)



Source:Environmental Research Institute, Tokyo

Teiichi Speak out in Japanese Congress!

Information Disclosure Law
Environmental Assessment Law
Auto Mobile Emission Control Law
Dioxin Control Law
PRTR Law

.....





Teiichi Propose many Ordinances to Nagano Prefecture Council as a Governor's Advisor

- Solid Waste Management Ordinance
- Global Warming related Ordinance
- Strategic Env. Assessment Ordinance



National Law for Sustainable Society

Building a Sound Material-Cycle Society

Fundamental Law for Establishing a Sound Material-Cycle Society (2000)

Fundamental Plan for Establishing a Sound Material-Cycle Society(2000-2010)

Image of a Sound Material-Cycle Society

Manufacturing: DfE (Design for Environment), long-life products, lease & rental
Waste management: cyclical use, appropriate disposal system

Quantitative Targets: FY2000-2010

1 Targets for Indicators Based on Material Flow Accounts

- a) Resource Productivity
- b) Cyclical Use Rate
- c) Final Disposal Amount

2 Targets for Indices Related to Efforts

- Reducing the quantity of municipal solid waste
20% reduction of garbage discharged from households per person per day compared with FY2000
- Promoting sound material-cycle related businesses
Doubling the size of the related market and the number of related jobs compared with FY 1997

National Laws for Sustainable Society

Building a Sound Material-Cycle Society

Law for the Promotion of Effective Utilization of Resources (2001.4 ~)

Container and Packaging Recycling Law (1997.4 ~ now under amendment)

<Responsibility> Consumer : Cooperating with sorted collection

Municipalities : Conducting sorted collection

Businesses : Recycling

<Target recyclable container and packages>

Glass bottles Glass bottles

PET bottles PET bottles, Plastic or paper containers & packages

Steel/Aluminum cans Steel/Aluminum cans

Paper Cartons Paper cartons and cardboard box

Home Appliance Recycling Law (2001.4 ~)

<Target home appliances> air-conditioner, TV, refrigerator, washing machine

Person discharging the these appliances has to pay the fees for collection and recycling.

More than 11,000,000 units were collected in FY2003

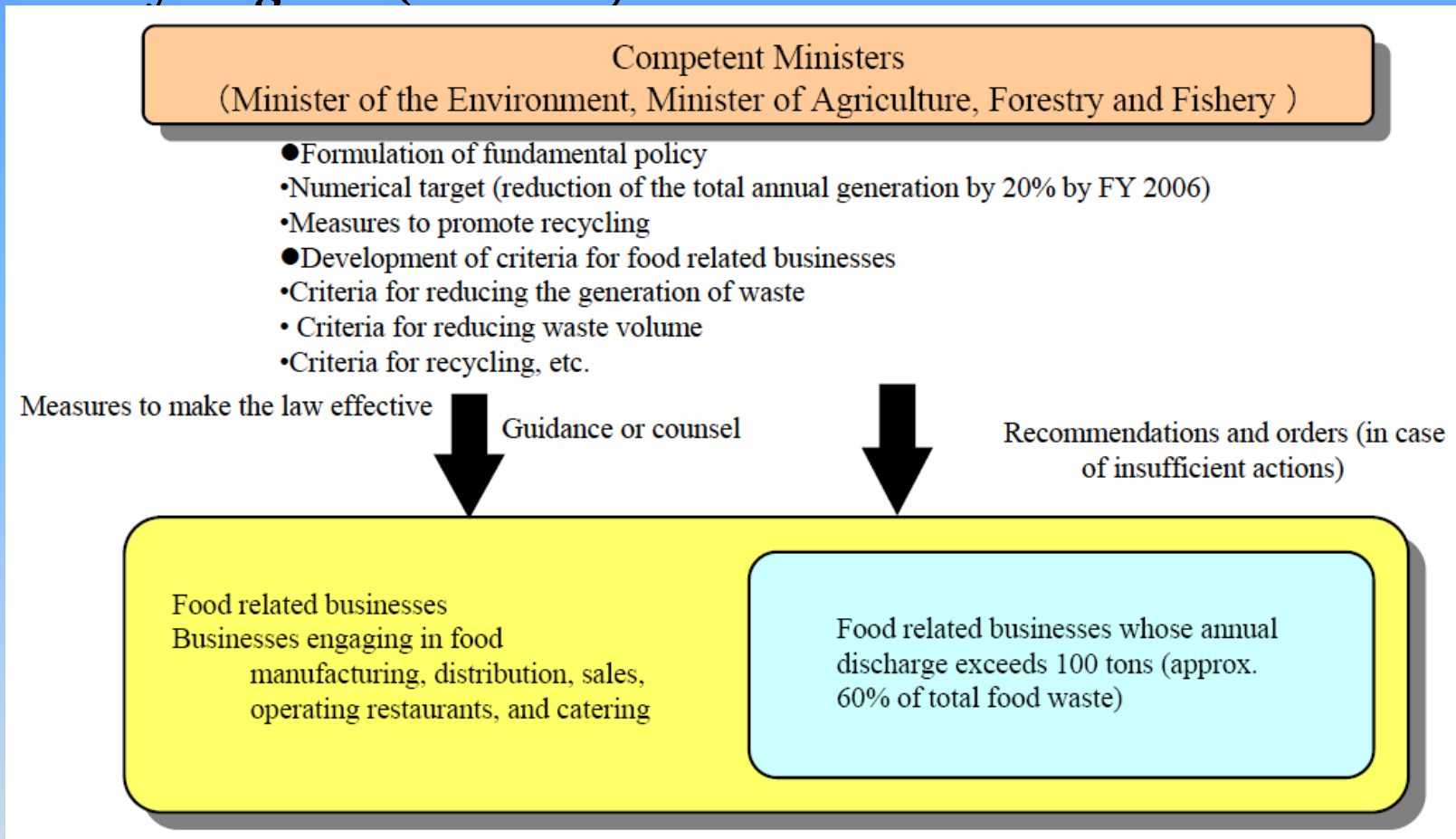
Construction Material Recycling Law(2000.5 ~)

A person who order C&D has to submit the notification to the Pref.Government

C&D wastes should be sorted properly before treatment.

National Laws for Sustainable Society

Food Recycling Law(2001.5 ~)



End-of-Life Vehicle Recycling Law (2005.1 ~)

Law on Promoting Green Purchasing(2001.4 ~)

The Action Plan for Greening Government Operation

Promotion of Procurement of Eco-Friendly Goods and Services by State and Other Entities

First Zero Waste Town in Japan in Kamikatsu Town



source: Environmental Research Institute, Tokyo

上勝町資源分別方法

2004年4月1日より

毎日の収集

場所：日比ヶ谷ゴミステーション 収集場所：毎日 午前7時30分から午後2時まで
 年末年始は12月31日～1月2日までお休みします。

①アルミ缶
 中を洗い切って
 乾かして下さい。




②スチール缶
 中を洗い切って
 乾かして下さい。



③スプレー缶
 中身を洗い切って
 必ず力をあけて出
 して下さい。
 キャップ・噴射ボ
 タンは、はずす。



④金属製キャップ
 水洗いして下さい。



びん類
 ⑤透明びん ⑥茶色びん
 中を洗い切って乾かして下さい。



⑦その他のびん ⑧リサイクルびん
 瓶・蓋・その他は別



⑨その他のガラス類・陶器類・貝殻
 フライス・コップ類 磁器類
 洗って、乾かしてか
 ら出して下さい。
 ただし、洗面所・ト
 イレ等の大きな陶
 器類は最大ごみと
 して出して下さい。
 (最大10kgのコンテナに
 4kg程度まで)



⑩乾電池
 ・アルカリ・マンガン
 ・リチウム
 ・ボタン
 ・ニカド



蛍光管
 ⑪そのまま ⑫壊れたもの



⑬鏡・体温計



⑭電球
 内側を洗って下さい。
 スズロール以外の素材
 がついているものは取
 り除いて下さい。



⑮発泡スチロール類
 内側を洗って下さい。
 スズロール以外の素材
 がついているものは取
 り除いて下さい。



⑯古布
 濡れたものはダメ。
 透明の袋に入れて下
 さい。



⑰古紙類
 ⑱紙パック
 高い、切り開きかして
 束にしないで下さい。



⑲段ボール
 大きめにたたみ、破ら
 ぬでしてして下さい。



⑳新聞・折込チラシ
 白の紙ひもでしばって
 下さい。



㉑雑誌・コピー用紙
 白の紙ひもでしばって
 下さい。



㉒割り箸
 洗って、乾かしてから
 出して下さい。



㉓ペットボトル
 ふたとラベルを
 取り、中を洗い
 干して出して下
 さい。



㉔ペットボトルのふた
 水洗いして下さい。



㉕ライター
 ガスを洗い切って下さい。



㉖ふとん・毛布・絨毯・カーテン・カーペット
 折りたたんで下さい。



㉗紙おしめ・ナプキン
 内側はトイレに流して
 乾草等の有害物質に入
 れて下さい。



㉘農 食 油
 必ずこしてから出して
 下さい。
 食用油以外はダメ



㉙プラスチック製容器包装類
 ⑳ ㉑ ㉒
 内側を洗って下さい。
 水は、多量に洗い
 しないで下さい。



㉚どうしても燃やさなければならない物
 (燃やさないで)
 再活用できないか？
 よく考えてみましょう。
 資源・各品以外のプラ
 スチック類等。



収集日時毎月第4日曜日 7:30~14:00

㉛異タイヤ・異バッテリー
 1kgまで毎に 100円



㉜粗大ゴミ
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳ ㉑ ㉒ ㉓ ㉔ ㉕ ㉖ ㉗ ㉘ ㉙ ㉚ ㉛ ㉜ ㉝ ㉞ ㉟ ㊱ ㊲ ㊳ ㊴ ㊵ ㊶ ㊷ ㊸ ㊹ ㊺ ㊻ ㊼ ㊽ ㊾ ㊿



㉝家電製品 (テレビ・エアコン・洗濯機・冷蔵庫・炊飯器)
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳ ㉑ ㉒ ㉓ ㉔ ㉕ ㉖ ㉗ ㉘ ㉙ ㉚ ㉛ ㉜ ㉝ ㉞ ㉟ ㊱ ㊲ ㊳ ㊴ ㊵ ㊶ ㊷ ㊸ ㊹ ㊺ ㊻ ㊼ ㊽ ㊾ ㊿



㉞生ゴミ
 生ゴミは、
 各家庭で燃焼化



㉟農業用農ビニール・農業びん等
 農用びんは別して下さい。



日比ヶ谷ゴミステーション 08854-6-0770 上勝町まちづくり推進課 08854-6-0111

*それぞれを分別して日比ヶ谷ゴミステーション内の指定された場所にお持ち込み下さい。

First Zero Waste Town in Japan 35 Separation in Kamikatsu Town



source:Environmental Research Institute, Tokyo

**Effectiveness of
Zero Waste in Kamikatsu
Waste Treatment Cost became smaller!!**

**Cost of Waste Collection and treatment
(Tax payed/year/per capita)**

Average Local Municipalities

Canada Dollar 200 ~ 300

Kamikatsu Town

Canada Dollar 130 ~ 150-

Nova Scotia, Canada

Canada Dollar 80 ~ 90

横石社長が開発した高齢者専用パソコンで 自分の売り上げ順位をみるおばあちゃん



Source: Environmental Research Institute, Tokyo