

Status of Japanese E-Waste Recycling

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Relation with Netherlands

- 400years friendly relationship between Netherlands and Japan
- Netherlands was only the country for Open Trade during Edo-Shogun period
- Japan have learned the Recycling Technology and Take Back Scheme from Europe

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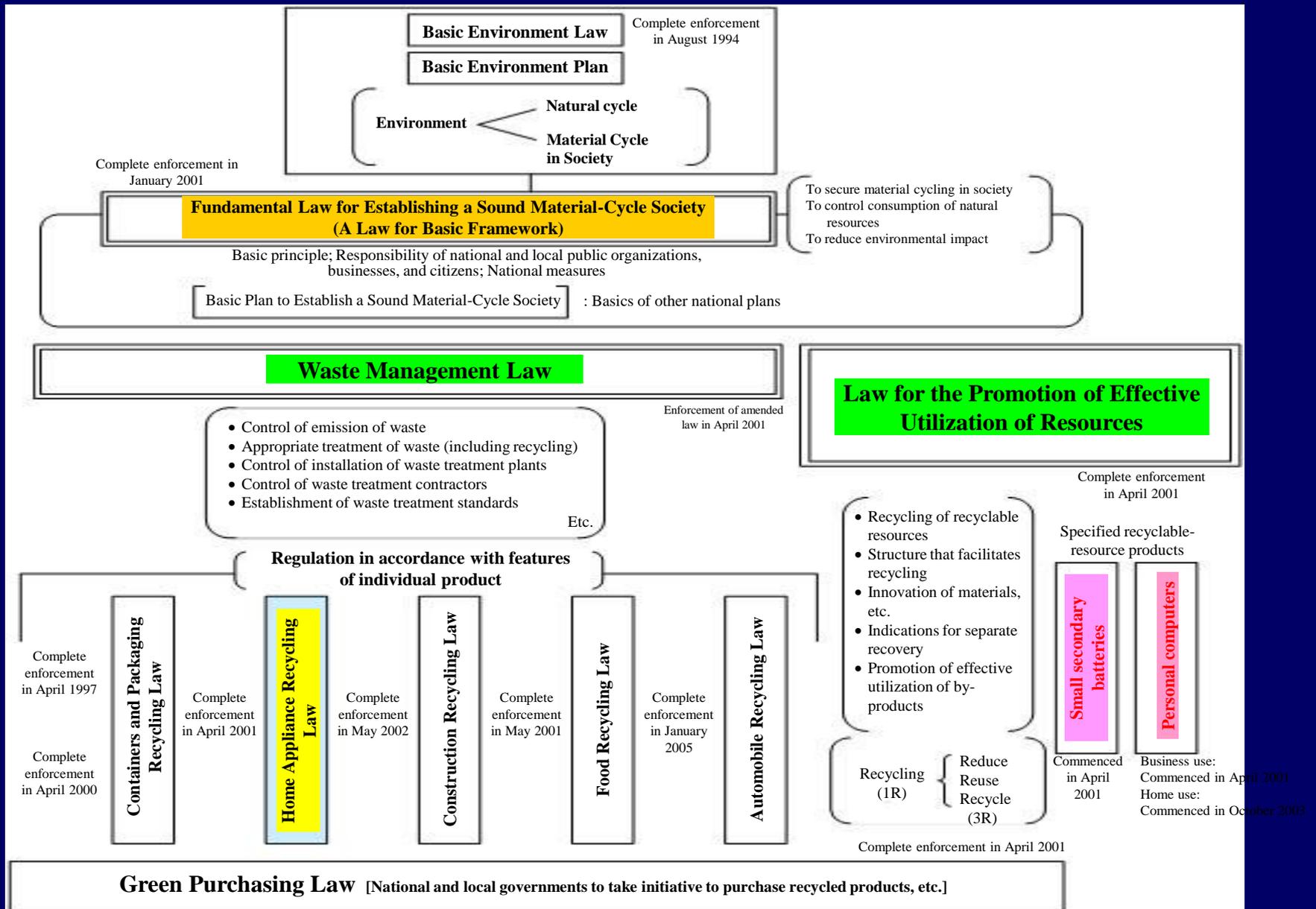
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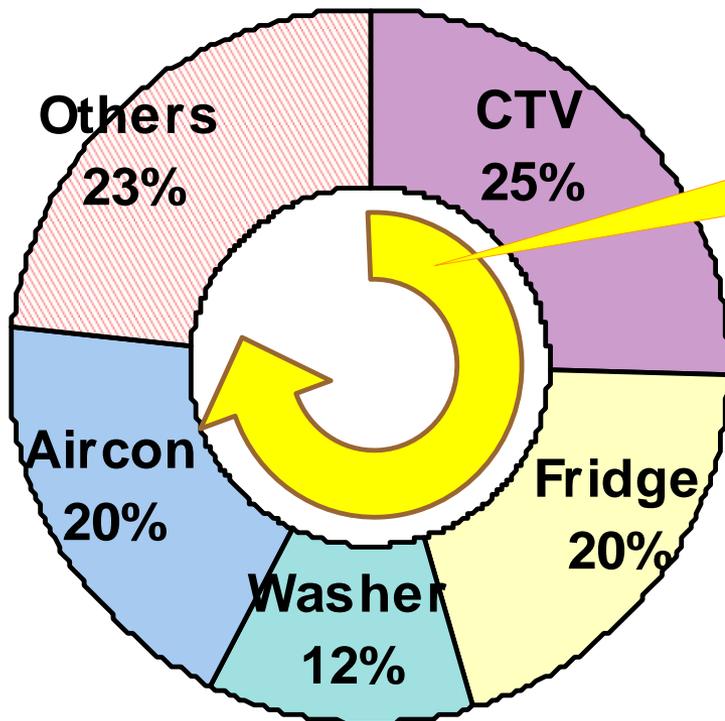
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Legal System in Japan



The weight ratio against PoM in Appliance

PoM in Appliance (FY2009)
(Weight basis)



• PoM (Put On the Market)

77% weight volume is covered by Specific 4 items in POM(2009)

- POM(FY2009) in Appliance 1,5M tons
- Others are ITs & SDAs

[Source] Prepared on the basis of data of RKC, HA handbook, 2010, industrial association, GFK and our research with some amendments added

- Specific 4 items (CTVs, Refrigerators, Washing Machine and Air Conditioners) are majority of PoM in Weight basis.

Legislation Background of Home Appliance Recycling Law

(TVs, Refrigerators, Washing machines & Air-conditioners)

Four items

1. Treatment

Difficult

Limit of treatment by municipality

- Difficult items for proper treatment
- Growing in size of home appliance
- Limit of treatment with incinerator(Issue of dioxin)
- Difficult in treating fluorocarbons for insulation

2. Emission

High

Large volume occupied by home appliance
(18-20 million units / 600K tons annually,
accounting for 15% of all oversized trash)

- Tight landfills for general waste
(8.8 remaining available years as of 2000)

3. Resources Value

High

Useful resources contained is rich

- Effective use of resources (iron, copper, aluminum, etc.)

Overview of HARL

Legislation

... May 1998

Enforcement

... April 2001

Revision

... April 2009

Covered items

Legal recycling rate*

1. TVs (CRT TVs)

55 (55) % or above

(Flat-screen TVs)

(50) % or above

2. Refrigerators & freezers

50 (60) % or above

3. Washing machines & clothes dryers

50 (65) % or above

4. Home-use air-conditioners

60 (70) % or above

* (): legal recycling rates after 2009

* Recycling rate (%)

= Weight of valuable materials / Gross weight of wastes x 100

Scheme under HARL



Designated collection point (379 sites)



Receiving & unloading



Verification with a HA Recycling Ticket



Input and sending data to the HA Recycling Tickets System



Transport from DCP to RP

Recycling plant (49 facilities)



Dismantling CRT of TV



Recovery of refrigerant fluorocarbon from fridge



Manual dismantling of washing machine



Recovery of refrigerant fluorocarbon from AC

Obligation of Producer / Importer

1. Based on Individual Producer Responsibility in principle

2. Obligation

- Take back arranging designated take back site**
- Recycling used home appliances taken back according to the recycling standards set by government**

3. Exemption

Producer/Importer whose q'ty less than 900K pcs of ACs/ TVs and 450Kpcs of Washing machine/Fridge for last 3years

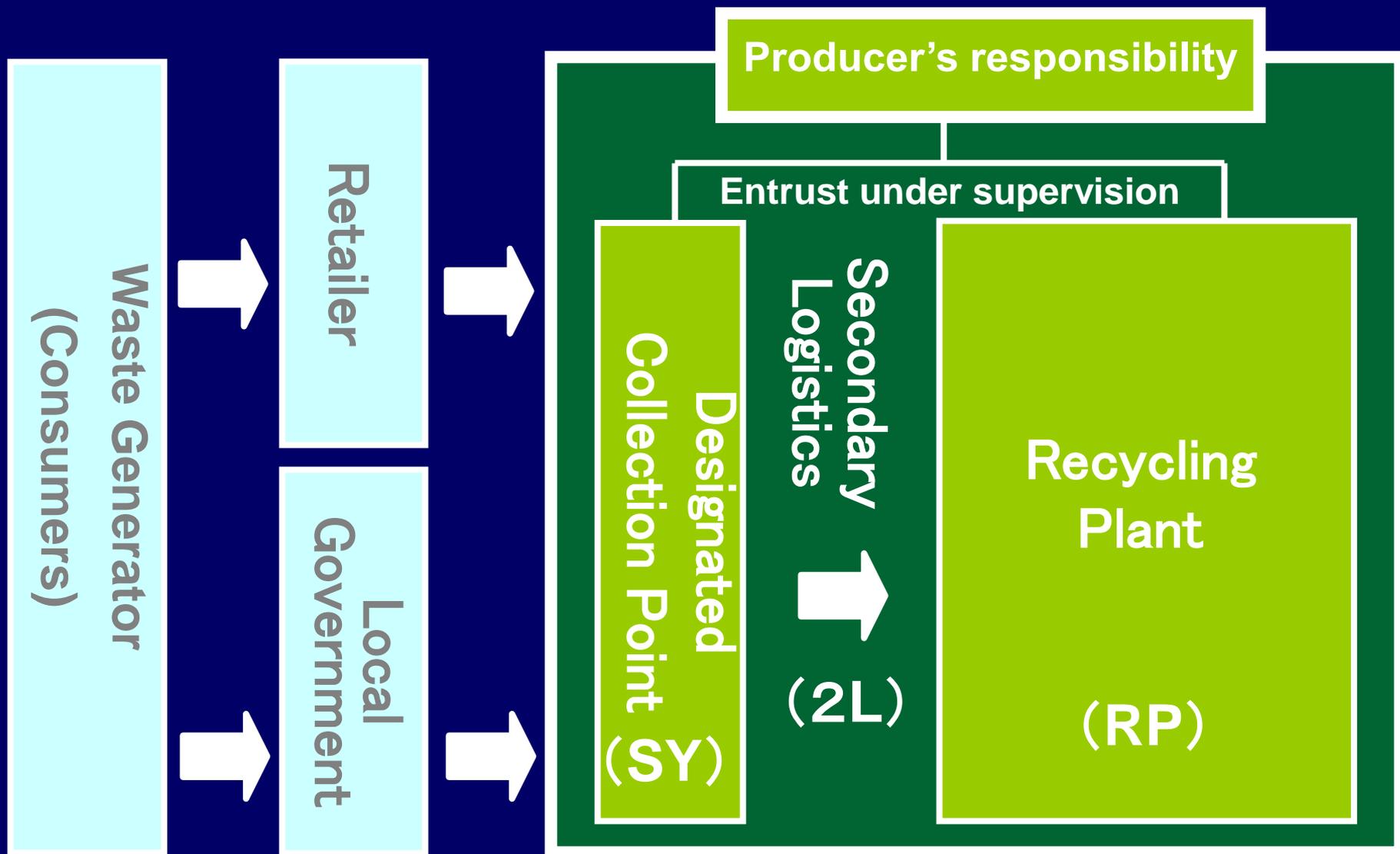
4. There are 3schemes,

A Group : (23 companies-Panasonic,Toshiba,JVC,Daikin etc)

B Group : (18 companies-Hitachi,Mitsubishi,SONY, SHARP etc)

Designated bodies : (Orphan Product, Small producer/Importer)

Producer's Responsibility in HARL



*Producers are responsible for breach of HARL at SY and RP.

Two Producers Take Back Schemes

1. Individual producer responsibility in principle
2. Need a system in which competition principle & formed A and B
3. Designated Bodies can entrust Group A or B

	Group A	Group B
Basic concept	<p>Effective utilization of existing recyclers' facilities</p>  <p>Decentralized local processing system</p>	Newly established manufacturers' own recycling plants and utilizing logistics-dedicated companies
Participating manufacturers	<p>23 (Panasonic, Toshiba, etc.)</p>	<p>18 (Hitachi, Mitsubishi, Sharp, Sanyo, Sony, etc.)</p>
Collection volume (on a unit basis)	Approx. 40%	Approx. 60%
Designated collection points (SY)	<p>379 (commoditized in Sep, 2010)</p>	
Recycling plants (RP)	36	18

Obligation of Retailer

Obligation

-Take back used home appliances

- Retailers themselves previously sold to consumers
- Retailers sell the same kind of home appliances to consumer

-Transfer

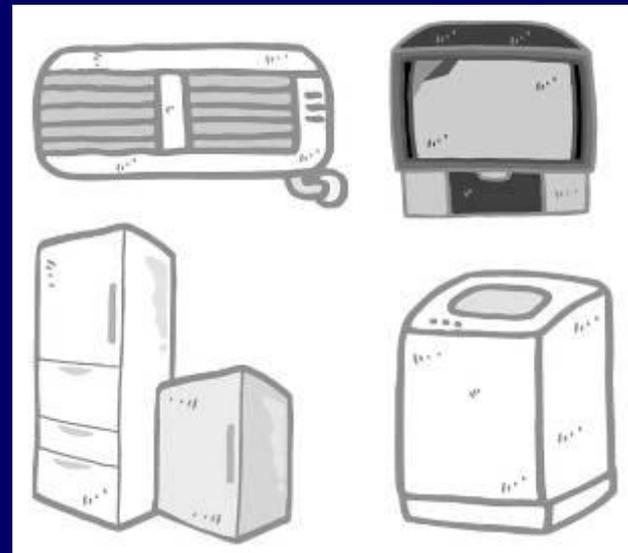
After taking back those appliances, transfer to relevant manufactures or importers.



Obligation of Consumer (Disposer)

Obligation

- Cooperation in appropriately transferring used appliances to retailers.
- Agreed to pay necessary fees for transfer and recycling of those appliances.



Obligation of Municipality

Obligation

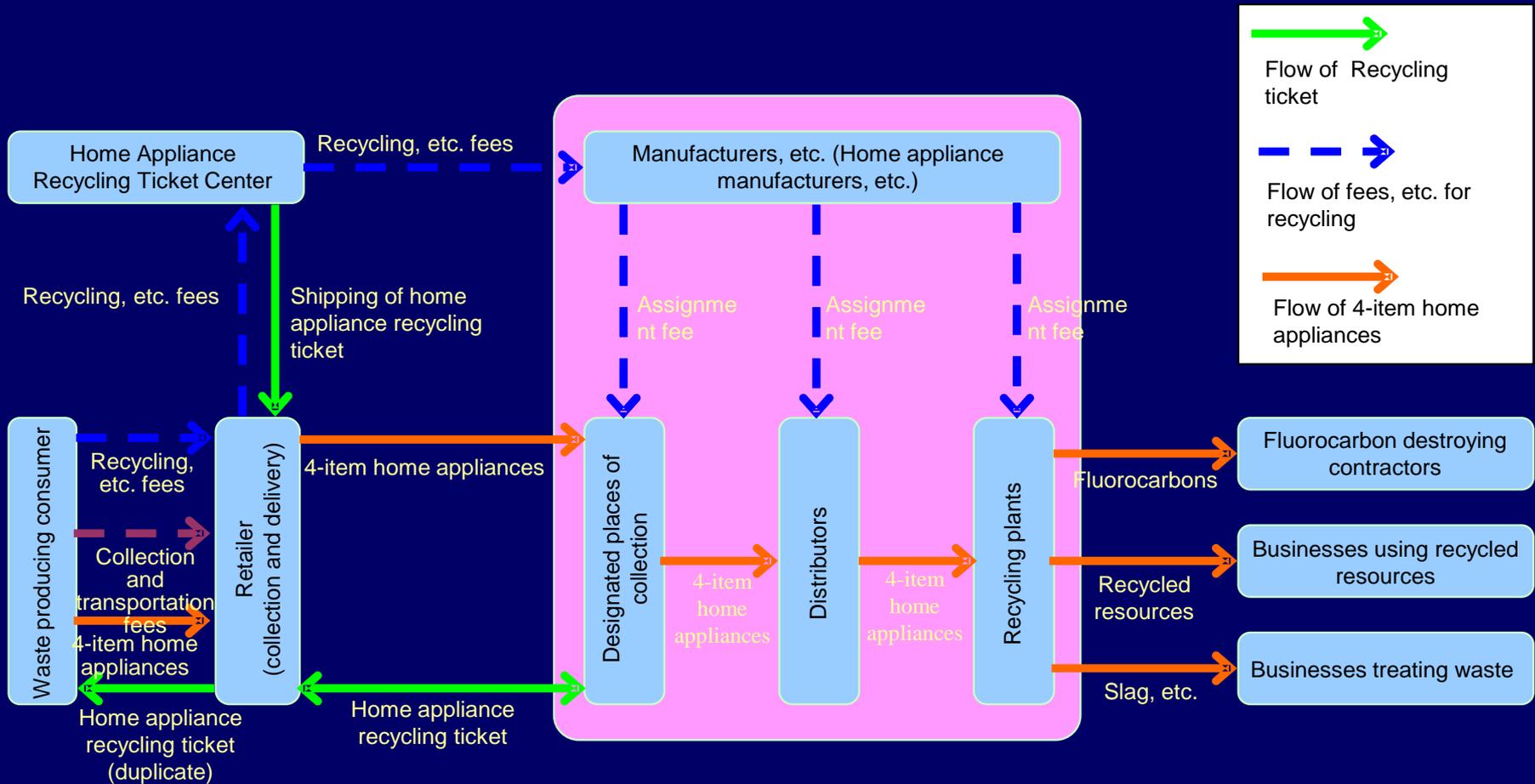
- Transfer to manufacture or independent bodies used appliances took back from consumers.

<Notice from Ministry of Environment to Municipality>

- Manage Retailers for appropriate operation
- Education of recycling manner to Consumer
- Monitor Illegal Disposal and establishment of the system



Money flow in HARL



[source] Prepared by modifying the "Guidebook for Persons in Charge of Home Appliance Recycling Law" (Ministry of Economy, Trade and Industry)

Home Appliance Recycling Ticket

家電リサイクル券 (特定家庭用機器廃棄物管理票) お問合せ管理票番号
0000-00000000-0

①小売業者控兼受領書

排出者

おなまえ
Disposer name & address
様
(電話番号 012-345-6789)

該当する品目・料金区分の□に✓を記入ください。

小売業者

交付日(引取日)西暦: 年 月 日
名称 **Retailer name & address**
住所
〇〇県□□市△△町××-××
(電話番号 098-765-4321)

①小売業者控兼受領書

SY stamp

Item and fee class

区分なし	小	大	備考
Air conditioners	<input type="checkbox"/>	<input type="checkbox"/>	製造業者等により料金区分のある場合とない場合があります。
TVs, CRT type	<input type="checkbox"/>	<input type="checkbox"/>	
LCD and plasma types	<input type="checkbox"/>	<input type="checkbox"/>	
Refrigerators and freezers	<input type="checkbox"/>	<input type="checkbox"/>	
Washing machines and clothes dryers	<input type="checkbox"/>	<input type="checkbox"/>	

Manufacturer, etc.

<input type="checkbox"/> Panasonic (100)	<input type="checkbox"/> Toshiba (110)	<input type="checkbox"/> Daikin (120)	<input type="checkbox"/> JVC (130)
<input type="checkbox"/> Hitachi Appliances (300)	<input type="checkbox"/> Sharp (310)	<input type="checkbox"/> Mitsubishi Electric (320)	<input type="checkbox"/> Sanyo (330)
<input type="checkbox"/> Sony (340)	<input type="checkbox"/> Fujitsu General (350)	<input type="checkbox"/> Sony (AIWA) (360)	<input type="checkbox"/> Mitsubishi Heavy Industries Air-Conditioning & Thermal Systems (370)

Producers name

※料金区分
●ブラウン管式テレビ
小: 15型以下、大: 16型以上
●液晶・プラズマ式テレビ
小: 15V型以下、大: 16V型以上
●冷蔵庫・冷凍庫
小: 全定格内容積170L以下
大: 全定格内容積171L以上

引取日 西暦: 年 月 日

名称・住所
Received stamp

別添入金票欄

再商品化等料金	
収集・運送料金	円
消費税	円
合計	円

Recycling Fee & Transportation fee

財団法人家電製品協会 家電リサイクル券センター ©財団法人 家電製品協会 2009

Processing Flow at Designated Collection Point



Receiving used home appliance



Checking Recycling Ticket against 4 items of used appliance



Reading and inputting Recycling Manifest



Uploading 4 items of home appliance to RP.



Storing Home Appliance Recycling ticket



Sending data to the Home Appliance Recycling System

List of Panasonic's Home Appliance Recycling Fee

Item		Type	Recycling Fee	
			(Currently)	(At the start of the law)
TVs	CRTs	16 inches & over	2,835 yen	2,835 yen
		<u>15 inches & under</u>	<u>1,785 yen</u>	
	LCDs / Plasma	16 inches V & over	2,835 yen	-
		<u>15 inches V & under</u>	<u>1,785 yen</u>	-
Refrigerators / Freezers		171L and more	4,830 yen	4,830 yen
		<u>170L and less</u>	<u>3,780 yen</u>	
Washing machines / Clothes dryers		---	2,520 yen	2,520 yen
Air-conditioners		---	<u>2,100 yen</u>	3,675 yen

* Additional collection and transport charge by retailers and local governments other than the above.

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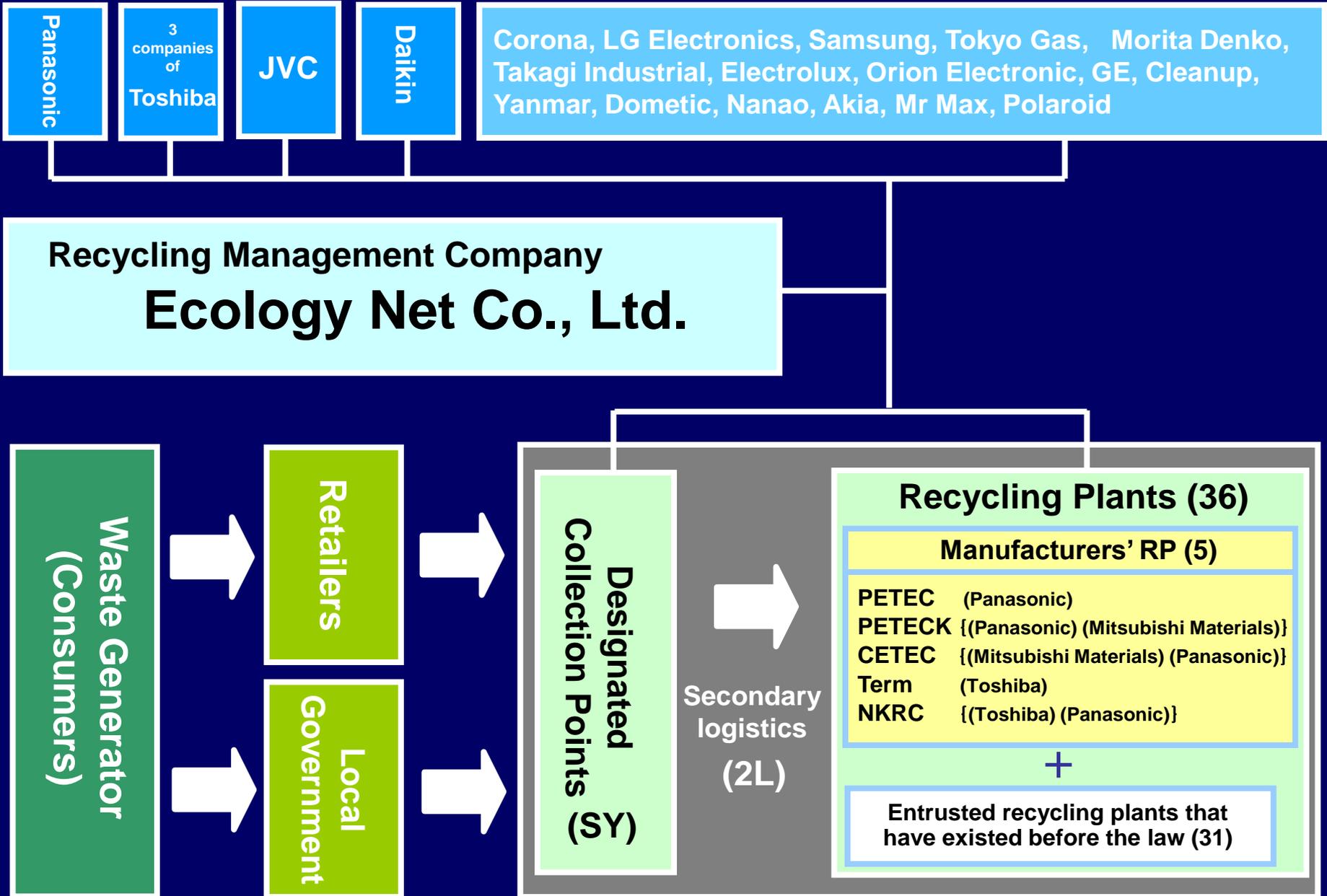
Summary

Characteristics of Group A's Recycling System

1. Panasonic and Toshiba developed a system that can be accepted by society and related stakeholders : and formed **Group A**
2. Panasonic established a recycling management company **Ecology Net** jointly with Toshiba, which takes on 23 manufacturers' recycling obligations:

Ecology Net developed a system to administer and operate all the 36 recycling plants and 379 designated collection points collectively
3. Group A adopted a geographically dispersed recycling system **utilizing existing contractors (collectors, recyclers, etc.)** through the administration of Ecology Net

Home Appliance Recycling System of Group A (Panasonic)



Rare-metal Recovery of Neodymium

Air-conditioners adopting neodymium magnet have increased since 2001

Commercialize neodymium magnet recovery promptly by developing a recovery procedures and equipments with low cost

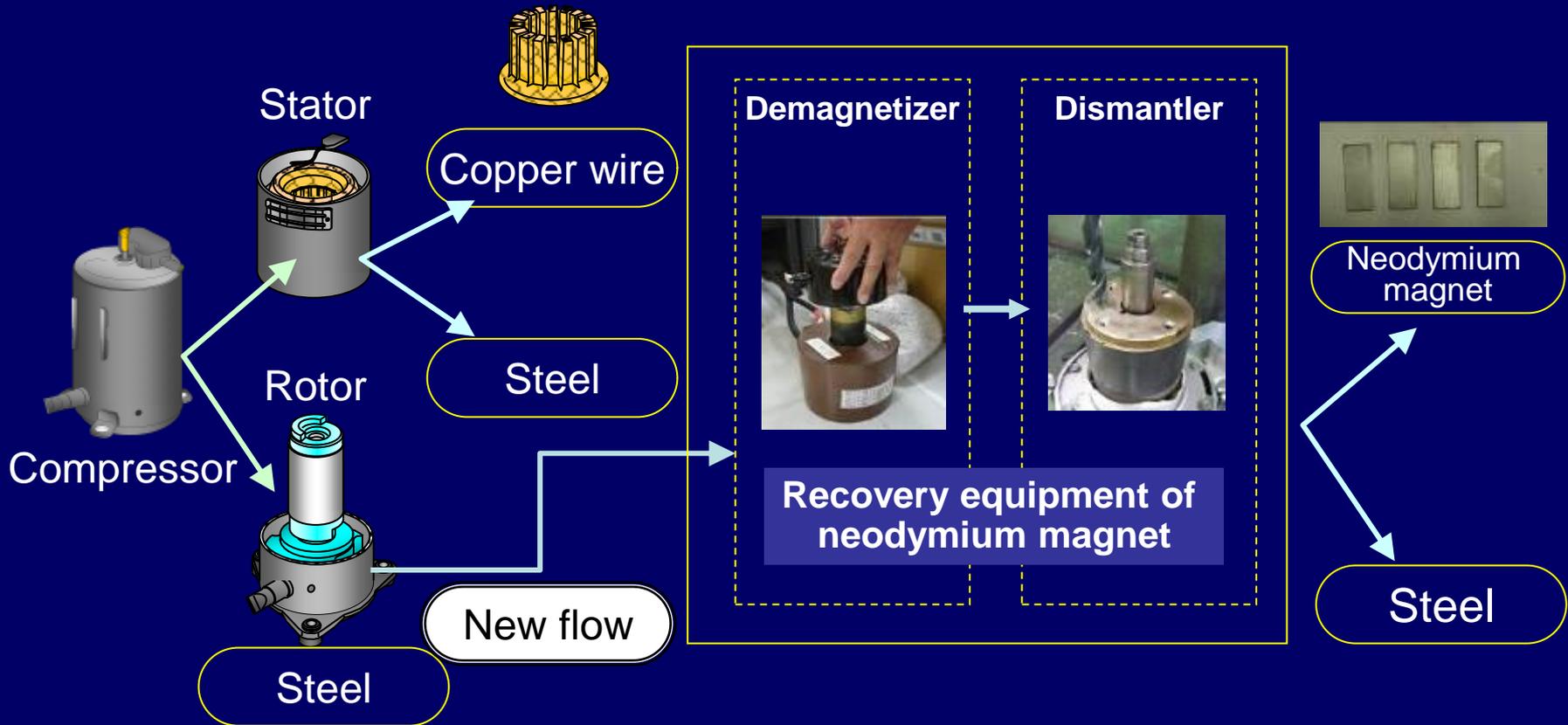


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Transition of Recycled Units & Recycling Rate

(1,000 units)

				2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Collected units (The Total of 4 items)				8,549	10,150	10,462	11,216	11,620	11,618	12,112	12,900	18,786	27,700
Recycling rate	TVs	CRT	(legal) 55% or more	73%	75%	78%	81%	77%	77%	86%	89%	86%	85%
		PDP & LCD	50% or more	-	-	-	-	-	-	-	-	-	74%
	Fridges & freezers		50% or more	59%	61%	63%	64%	66%	71%	73%	74%	75%	76%
	Washing machines & clothes dryer		50% or more	56%	60%	65%	68%	75%	79%	82%	84%	85%	86%
	Air- conditioners		60% or more	78%	78%	81%	82%	84%	86%	87%	89%	88%	88%

(1,000 tons)

Figures of recovered resources
by recycling 4 items (iron,
copper, aluminum, etc.)

211

263

282

311

334

345

378

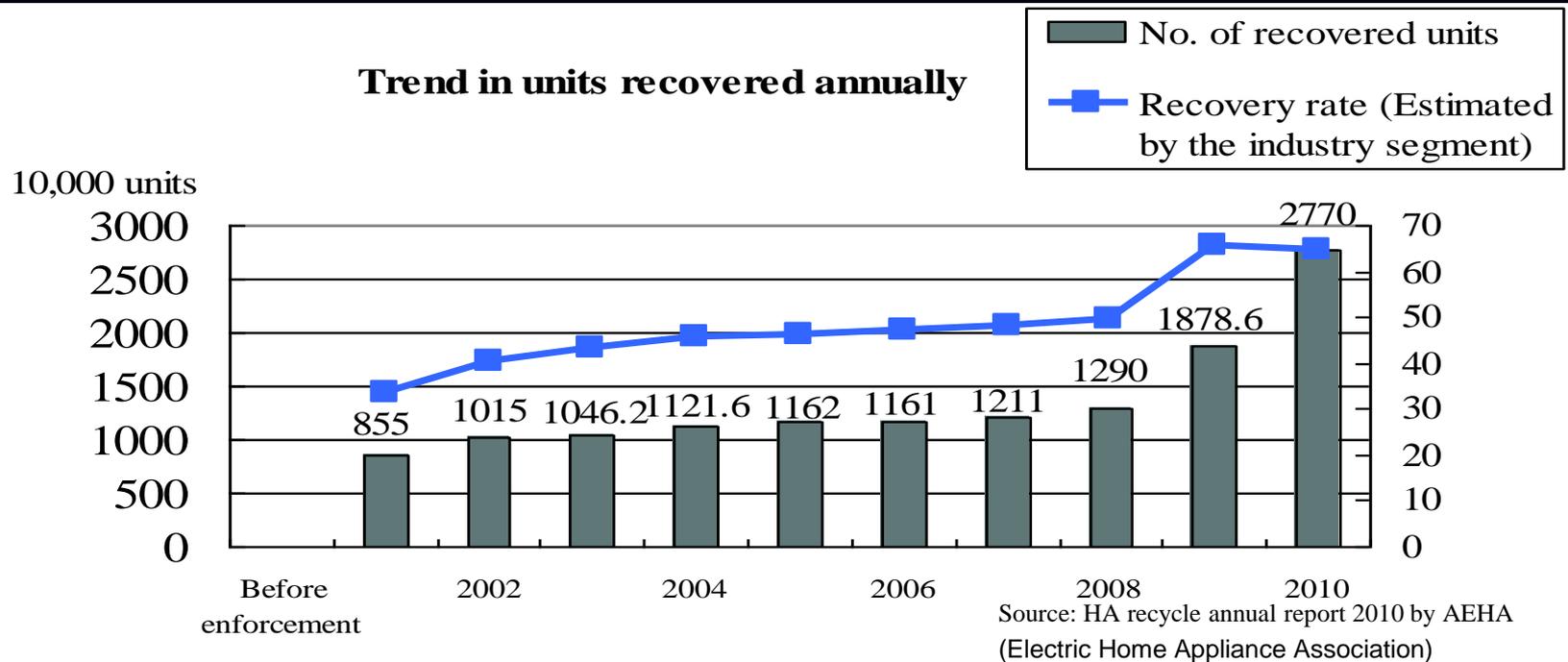
414

537

746

*legal recycling rates noted above are of the time when the law initiated and were revised in FY2009.

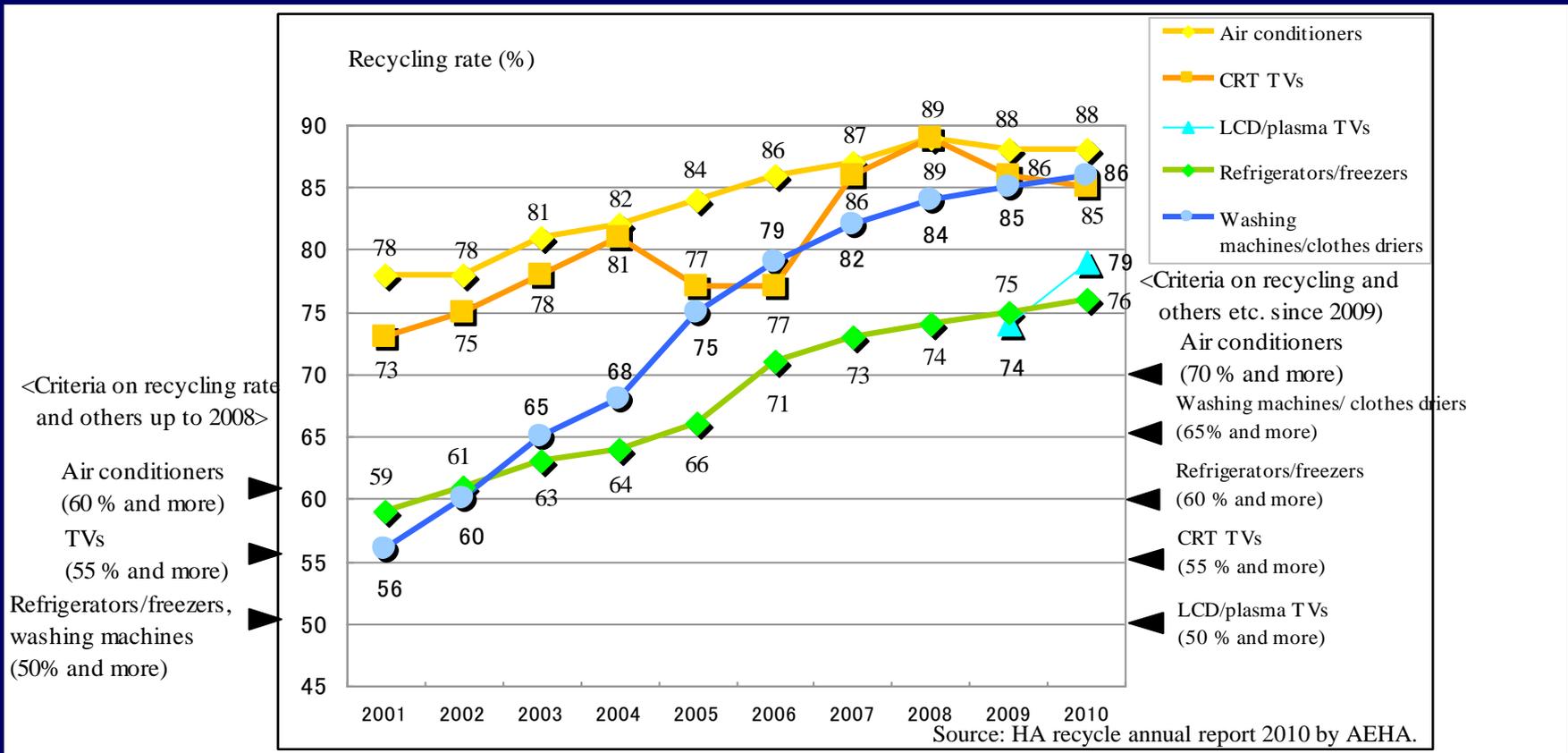
Trend of number of recycled units



(%)

- The recycled units have been increased in 2010 caused by Eco Point contribution scheme.

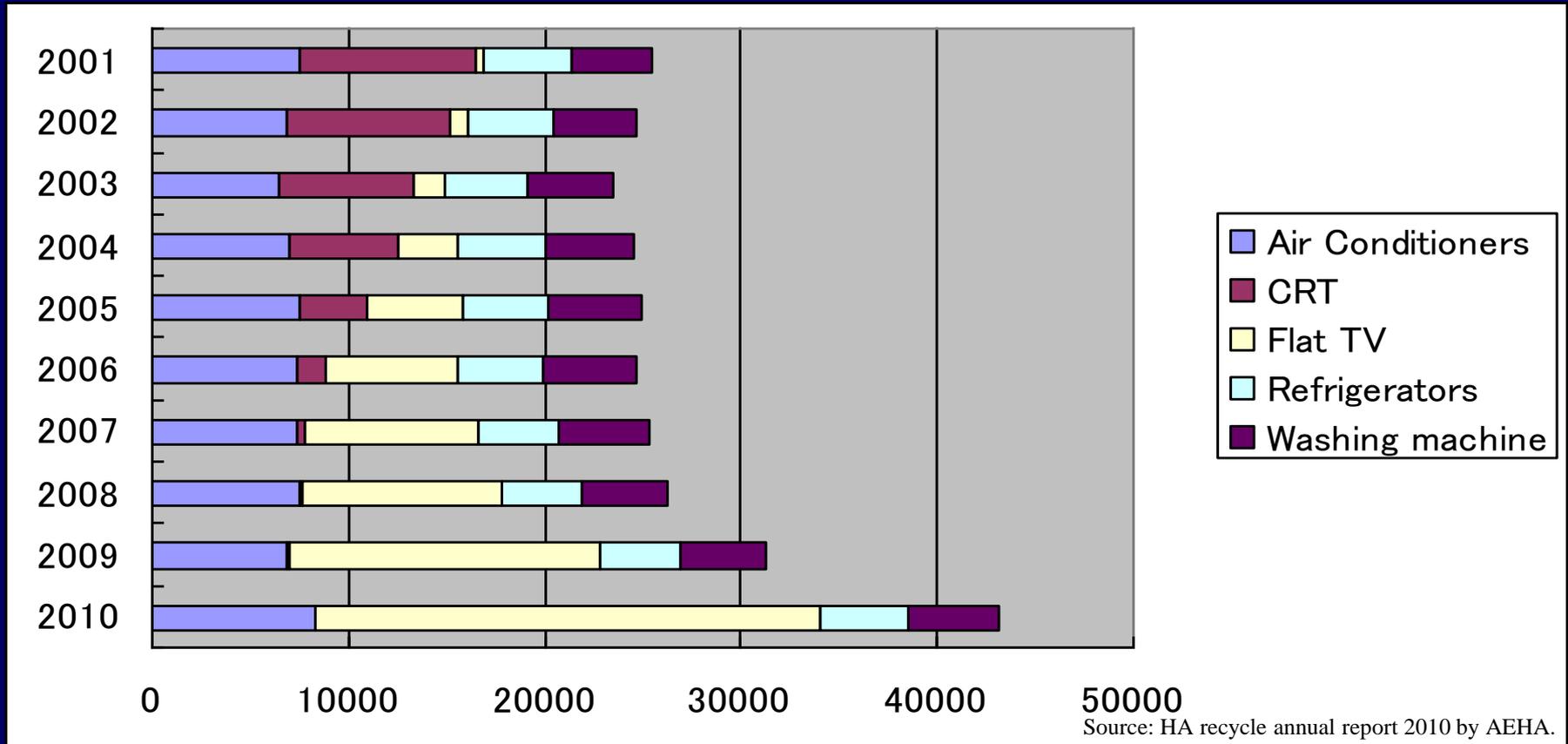
Trend of recycling ratio



- Enhancement of recycling rate

- A recycling rate considerably higher than the legally-specified value has been achieved

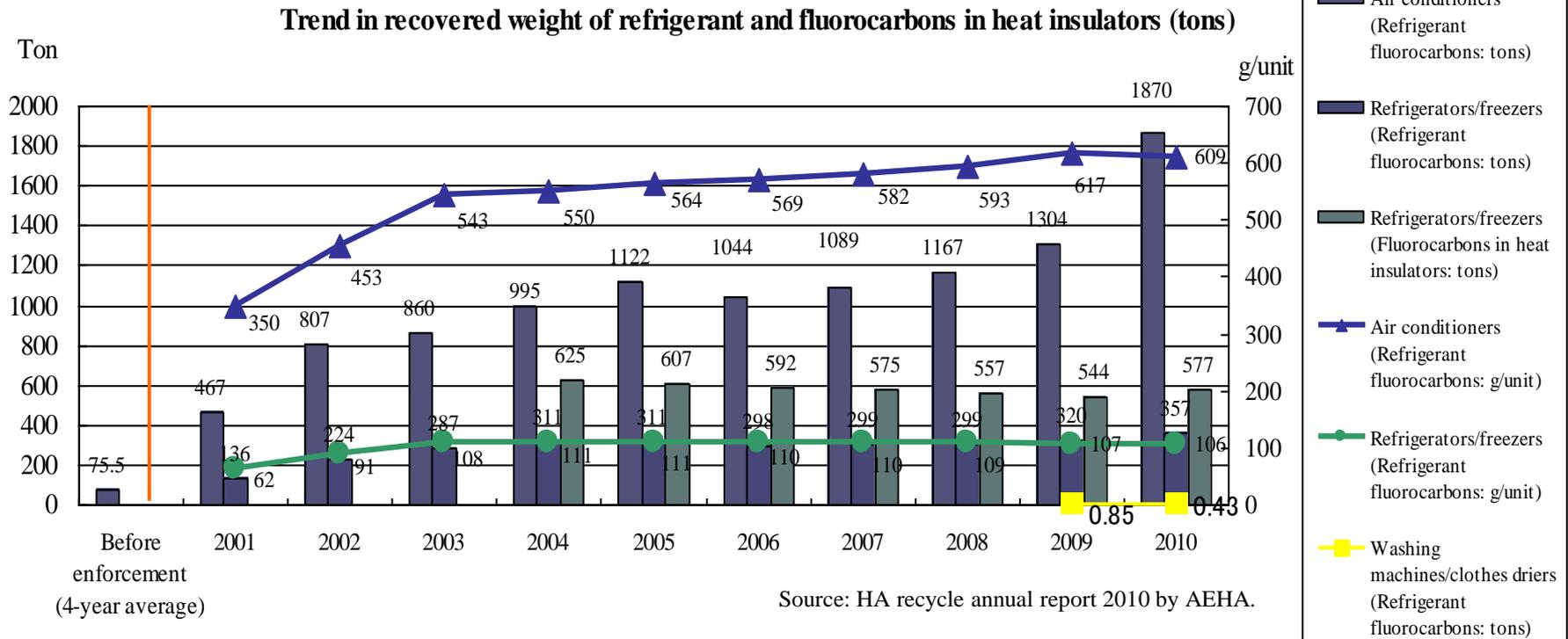
Trend in number of PoM 4-item home appliances



1000units

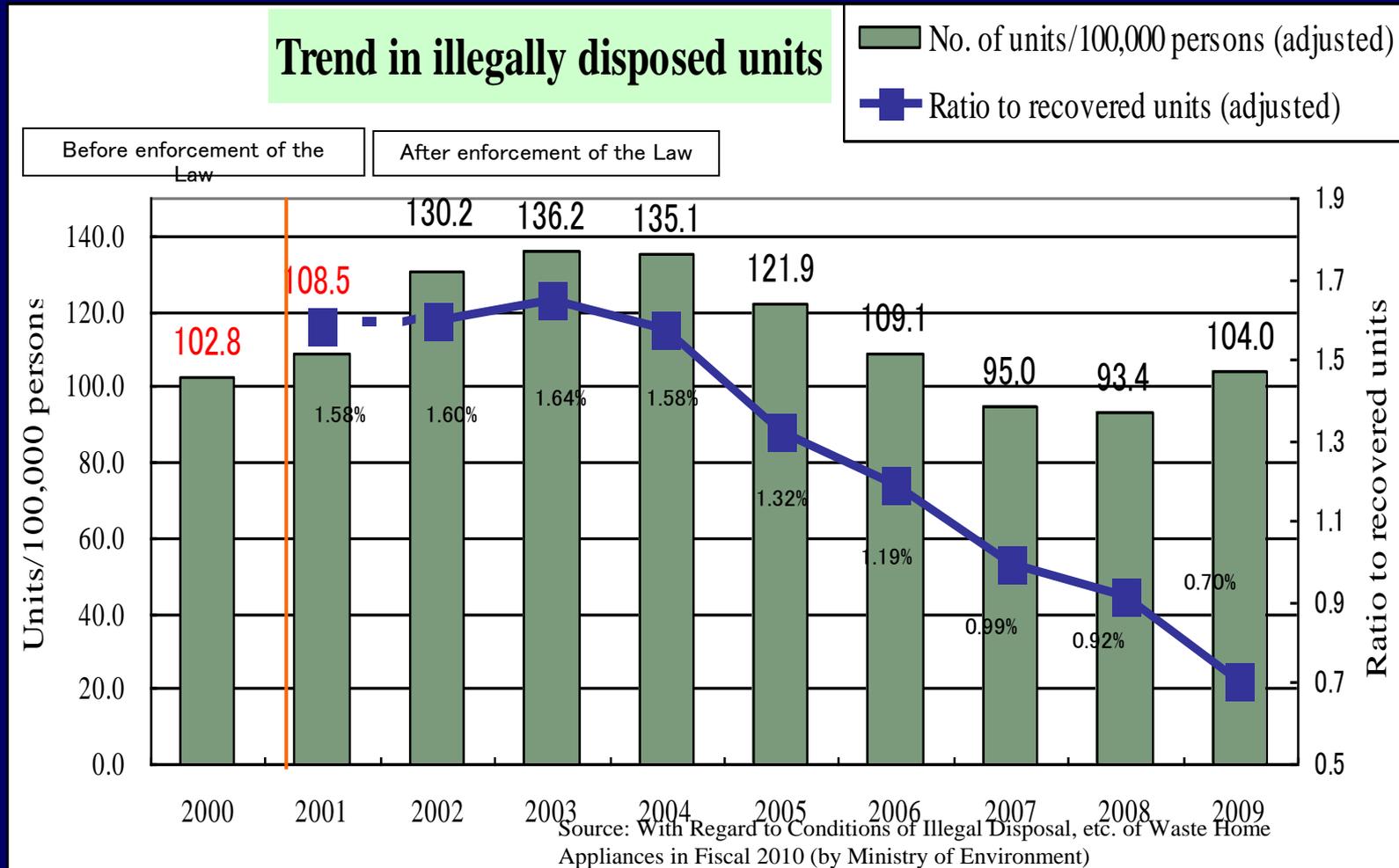
Drastic increase, due to change of satellite system as well as ECO points contribution by government.

Trend of recovered refrigerant and fluorocarbons in the heat insulator



- The recovered and destroyed amounts of refrigerant and fluorocarbons have been increasing at a good rate

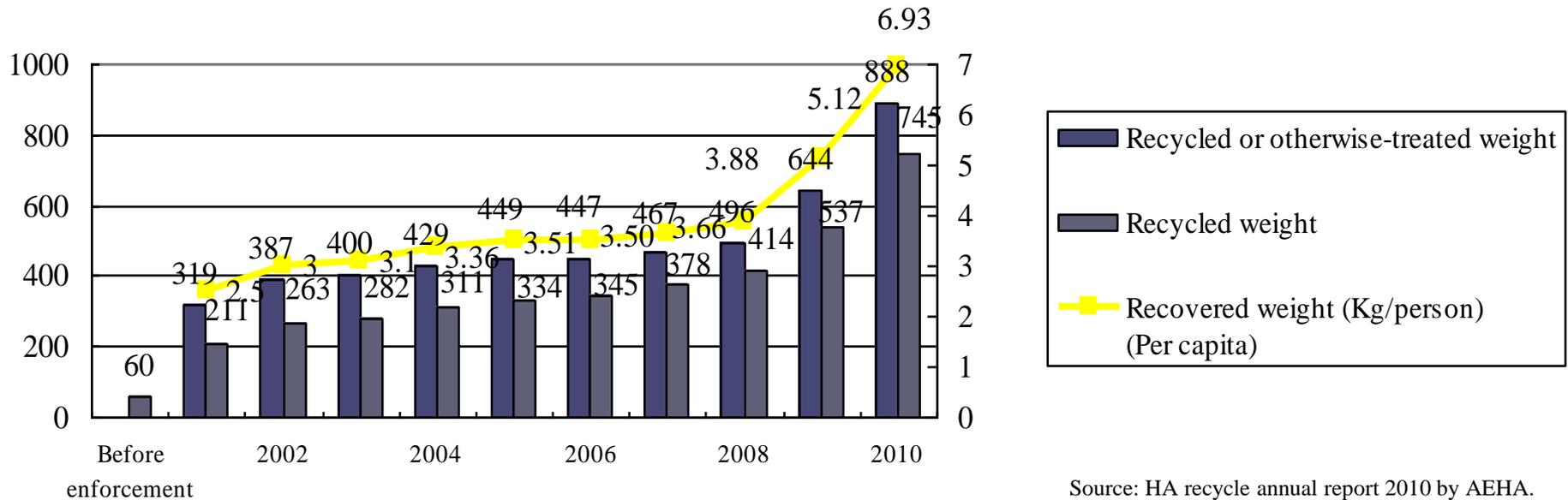
Trend in number of illegally disposed 4-item home appliances



- After enforcement law, the ratio of illegally disposed units have been decreased. In 2009, the ration becomes 0.7%.

Trends in treated weight of recycled or otherwise treated products and per-capita treated weight (total of 4 items)

Treated or recycled waste in weight (1,000 tons)



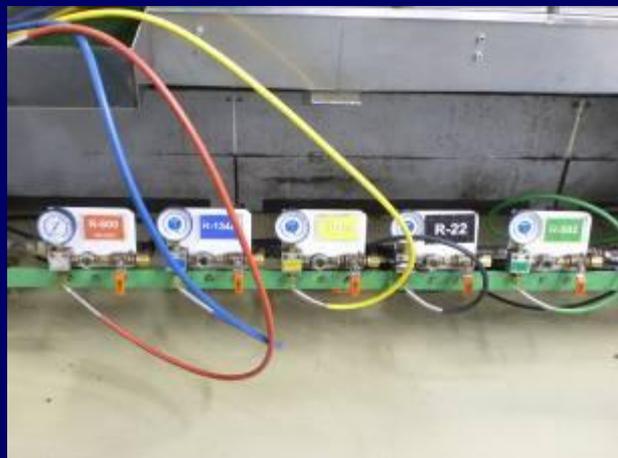
Source: HA recycle annual report 2010 by AEHA.

- The number of recovered appliances has been increasing at a good rate year by year.
- latest recovered weight per capita is 6.93KG in 4 items.

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Strict control for recovery of CFC



- Well controlled the separation of the type of refrigerant at Panasonic Eco Technology Center.

Tight control by Government

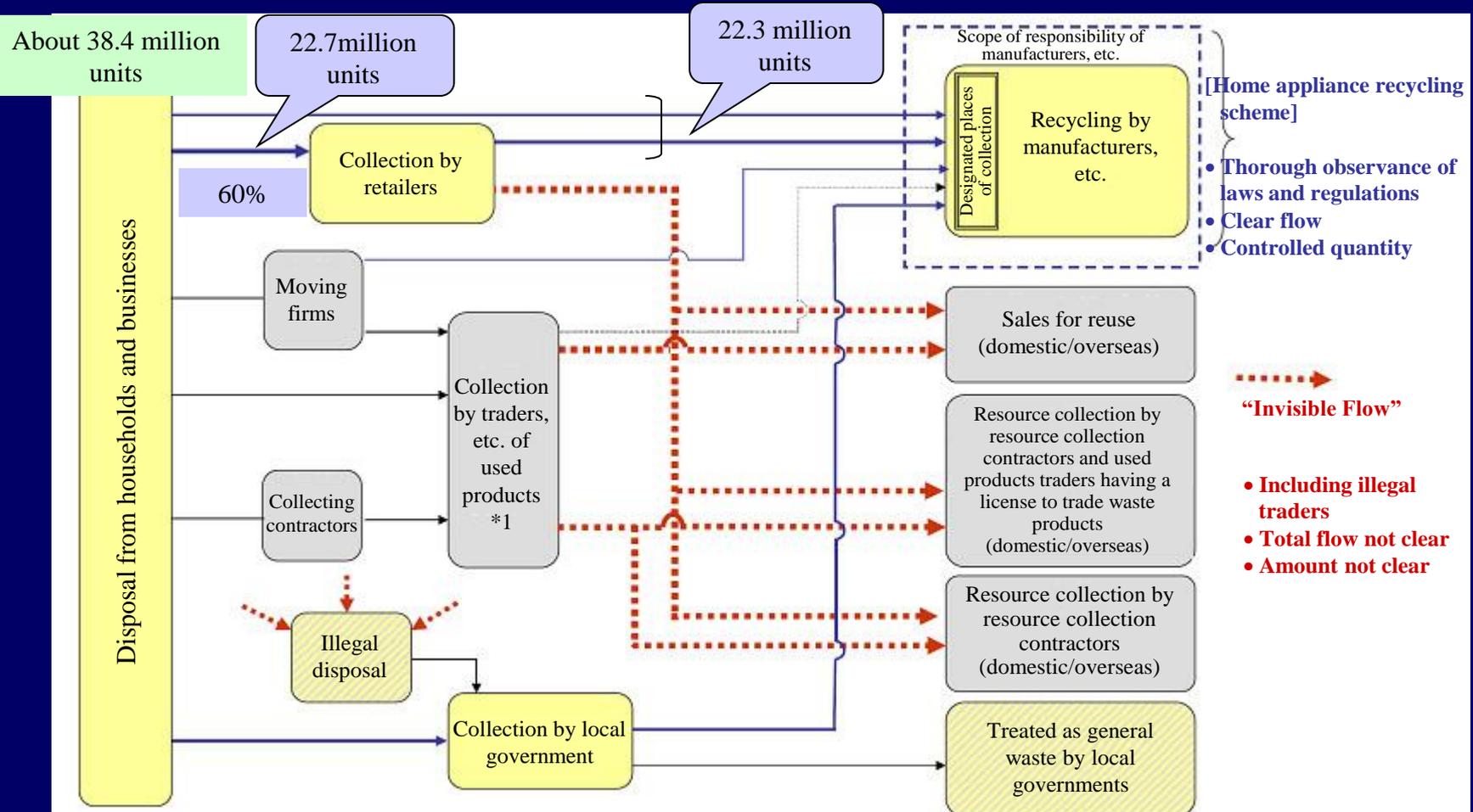


家電リサイクル法に基づく指導・処分の種類	
嚴重注意	当局への報告など自発的に対処した場合
勸告	自発的な対応をしないなど悪質な場合
命令	勸告に従わない場合
罰金	命令に従わない場合

- Government must exercise strict control over any violation on the law, the violator should set “Report on the collection” by government.
- If not compliance of the law, the violator act is published by news, media as well as web site by Ministry of Environment.

Invisible Flow (Estimated in 2010)

Number of used home appliance (4 items) not delivered to manufacturers, etc. and distribution route = "Invisible Flow"



*1 Including used goods dealers, certified waste disposal contractors, resource collection contractors
Data from MITI with amendment (2010)

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- (1) The shared responsibility runs well in HARL for 4 items. As a result, the recycling rate of the 4-item total was 66% in the first year and rose to 84% in 2010.
- (2) Government strictly enforced to producers & retailers to achieve HARL
- (3) Even strict control by law, there may be invisible flow which must be paid attention.
- (4) The Small HA is not applicable under law, and PCs, Mobile phones and batteries are covered in separate law.

Thank you for your kind attention