Annual Report on Steel Can Recycling

2015

スチール

JAPAN STEEL CAN RECYCLING ASSOCIATION
スチール缶リサイクル協会

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Acknowledgments

The Japan Steel Can Recycling Association has conducted several activities mainly to promote steel can recycling as well as litter prevention, the environmental beautification,and public relations activities since the association established in 1973. The activities initially focused on promoting steel can recycling lead to establishment of comprehensive sorted collection system and even the recycle-based society. In FY2014, the recycling rate of steel cans reached 92.0%, which is the highest in the world.

In order to promote steel can recycling activities in Japan, "Steel Can Recycling Annual Report" summarizes the situation of steel can recycling in the municipalities, the trends of recipients of steel can scrap, market forces for steel can scrap, etc. This is the 20th issue.

Our association decided to continue to promote our activities in order to establish recycle-based society and help much more people to improve their understanding of steel can recycling. We hope this report is useful for everyone.

October, 2015 Japan Steel Can Recycling Association

I Present Conditions for Recycling Steel Cans

1 . What are Steel Cans? How Many Steel Cans are Produced?

- Steel cans are used for beverages such as juice and coffee (beverage cans), foods such as canned fish and orange (food cans), dried seaweed, Japanese tea and cookies (general-purpose cans), and foods and other products (18-liter cans).
- The production of beverage and food cans together amounted to 350,000 tons in 2014. This was for approximately 77% of all steel cans produced.
- In 2014, 9.6 billion beverage steel cans were produced in Japan and the per capita annual consumption was 76 cans.

Beverage and food cans together amounted to 350,000 tons

General-purpose cans 81,000 tons

18-liter cans 26,000 tons

The data were from the Iron and Steel Statistics of 2014 published by the Ministry of Economy, Trade and Industry, and the National Federation of 18 Liter Cans Manufacturers Corporative Union.

The number of total beverage and food steel cans (Estimated values: The research conducted by Steel Can Recycling Association)

(million cans)

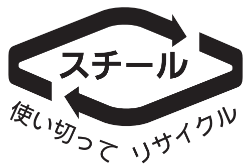
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Beverage cans	13,438	12,685	12,781	12,596	12,110	11,831	11,601	11,198	10,234	9,577
Food cans	1,155	1,075	1,114	1,042	1,007	993	893	898	858	851
Total	14,593	13,760	13,895	13,638	13,117	12,824	12,494	12,096	11,092	10,428

Marks of Steel Can

"Law for Promotion of the Utilization of Recyclable Resources" requires putting a mark on beverage cans to indicate their materials. And for general cans (i.e., cans for tea or confectioneries), the All Japan Federation of General Can Industries Association established a mark for their cans to indicate the can material. For 18 liter cans, The National Federation of 18 Liter Cans Manufacturers Corporative Union established a mark so that consumers can easily identify "steel cans" when sorting waste.

(Beverage Cans' Mark)

(General Cans' Mark)



(18 Liter Cans' Mark)

Components of Steel Can

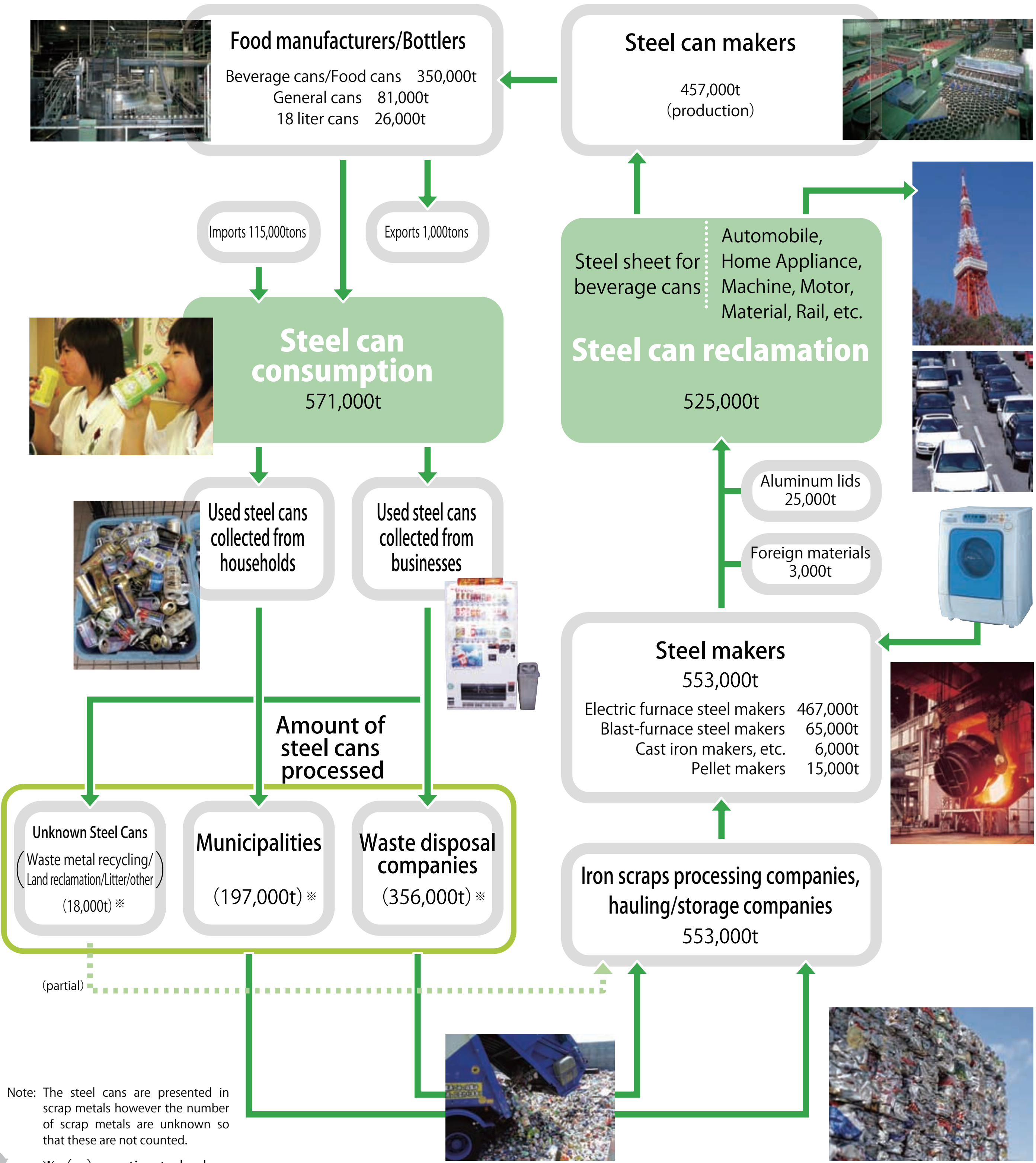
Steel sheets for beverage cans have high durability, workability, and intensity material.

Steel cans are recycled in various forms such as in the production of cars, rails, household electric appliances, reinforcing bars, and recycled steel cans.

Material ( ) : reference number	Ratio of major and alloy components (%)	Major alloy components (%)
Steel sheets for beverage cans (SPTE T-4 CA)	Fe 99.9 + Carbon 0.02 to 0.06	Aluminum 0.005 Manganese 0.03
Steel plates for cars (SPCE)	Fe 99.99 + Carbon 0.005 to 0.01	Titanium 0.0001
Steel plates for construction (SPCC)	Fe 99.8 + Carbon 0.1	Manganese 0.5 max
Steel wire for construction (SWRM)	Fe 98 + Carbon 0.1 to 0.4	Manganese 0.3 to 1.5
H-type steel (SG415H)	Fe 98 + Carbon 0.1 to 0.4	Manganese 0.4 to 1.7 Chromium 0.85 to 1.25

2. What Routes are Used to Recycle Steel Cans?

- Used steel cans are collected using separate collection systems or noncombustible collection routes operated by municipalities as well as through business-operated recovery routes for collecting from automatic vending machines, offices and plants. In both cases, steel cans are separated by magnetic separators at recycling facilities and processed into pressed blocks state for easy transportation.
- This iron scrap is purchased by iron and steel makers (mostly electric furnace steel makers) from scrap processors. The steel cans are recycled in many ways such as raw material for producing steel materials for construction, and steel plates for automobiles, refrigerators, washing machines, and new steel cans, etc.



Note: The steel cans are presented in scrap metals however the number of scrap metals are unknown so that these are not counted.

※ ( )··· estimated values

3. How Much Steel Can is Recycled in Japan ?

The recycling rate for steel cans in FY2014 was 92.0%

The recycling rate in FY2014 achieved the target set by the Industrial Structure Council of the Ministry of Economy, Trade and Industry. ※the target has changed to 90% since 2014.

Factors of high recycling rate

① The crude steel production in 2014 was at a record high of 1,670,000,000 (one billion six hundred ten million tons). The demand for scrap iron as raw material is increasing worldwide. Furthermore, crude steel production in Japan has surpassed 100,000,000 (one hundred million) tons per year, and the demand for it is high. The scrap steel cans are high quality and useful so it is increasingly highly regarded.

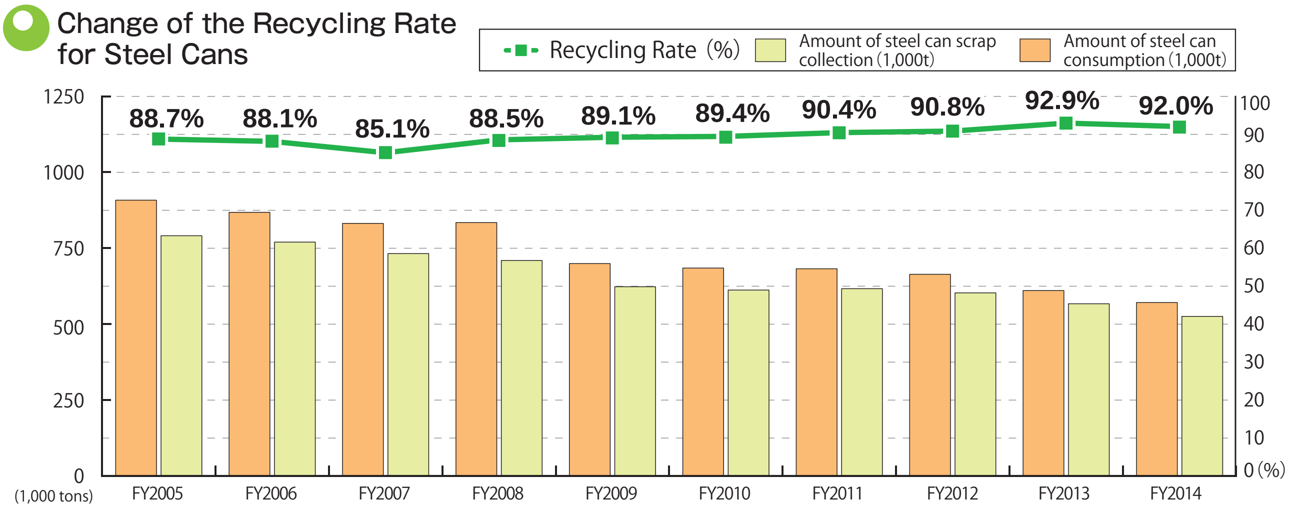
② The quality of raw materials in steel can scraps has improved year by year, since separate collection has well promoted through citizens' cooperation, separate collection system from municipalities as well as business activities has been fully equipped, and the accuracy of separation and processing at the recycling facilities and scrap processers have improved.

③ Since FY2008, we have known parts of the amounts which were shredded because a part of the can scraps shredded were distributed as standard except the can scraps.

Steel Can Recycling Rate of FY2013

$$\frac{\text{Amount of steel can scrap collection } 525{,}470\text{ tons}}{\text{Amount of steel can consumption } 571{,}157\text{ tons}} = 92.0\%$$

Change of the Recycling Rate for Steel Cans



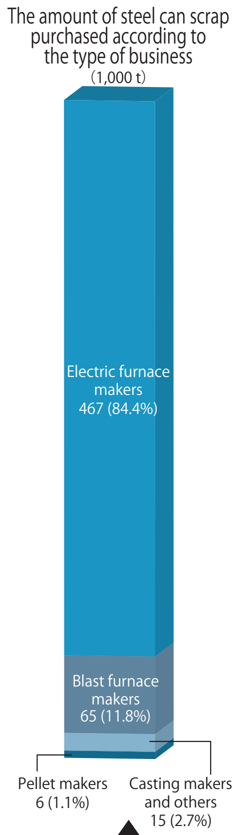
The Recycling Rate by Items

Items	Recycling rate (%)	Index	Method of calculation (Note)
Steel cans	92.0 (FY2014)	Recycling rate	Amount of steel can scrap collection / Amount of steel can consumption (Steel cans=Beverage cans+Food cans+General cans+Some 18-liter cans)
Glass bottles	67.3 (FY2013)	Recycling rate (cullet utilization ratio)	Amount of re-merchandising / Amount of domestic glass bottles consumption
PET bottles	85.8 (FY2013)	Recycling rate	Amount of PET bottles recycled in domestic and overseas / Amount of designated PET bottles sold
Paper containers/ packaging	23.5 (FY2013)	Collection rate	Amount of collection / Amount of discharge by households
Plastic containers	44.4 (FY2013)	Recovery rate	Amount of re-merchandising + Amount of self-collected / Prospective amounts of discharge
Aluminum cans	87.4 (FY2014)	Recycling rate	Amount of recycling of aluminum cans / Amount of sales of aluminum cans (Aluminum cans = beverage cans)
Cartons	44.6 (FY2013)	Collection rate	Amount of domestic collection / Amount of cartons used (Included loss paper and old paper)
Cardboard	99.4 (FY2013)	Collection rate	Amount of used cardboard (Amount of collections received domestically + [Exports - Imports]) × (Amount of consumption of cardboard / Shipping amount of cardboard produced by paper makers × 0.988) / (Amount of cardboard consumed by carton factories + Balance of amount of cardboard accompanied with exported good sand those with imported goods)

1. Types and Amount of Steel Can Scraps

Steel Can Scrap Purchase Amount According to Area and Type of Business (Unit: 1,000 tons)

	FY2013 (B)				FY2014 (A)				
	Press	Shredder	Total	%	Press	Shredder	Total	%	(A-B)
Hokkaido	21	2	23	3.8	20	1	21	3.8	-2
Tohoku	40	1	41	6.8	39	1	40	7.2	-1
Kanto	136	29	165	27.5	118	36	154	27.8	-11
Hokuriku	7	9	16	2.7	5	9	14	2.5	-2
Tokai	53	20	73	12.2	50	19	69	12.5	-4
Kinki	167	19	186	31.0	140	14	154	27.9	-32
Chugoku/ Shikoku	38	3	41	6.8	41	4	45	8.1	4
Kyushu/ Okinawa	38	17	55	9.2	42	14	56	10.1	1
Total	500	100	600	100.0	455	98	553	100.0	-47
Electric furnace makers	431	88	519	86.5	381	86	467	84.4	-52
Blast furnace makers	58	0	58	9.6	65	0	65	11.8	7
Casting makers and others	6	10	16	2.7	5	10	15	2.7	-1
Pellet makers	5	2	7	1.2	4	2	6	1.1	-1
Total	500	100	600	100.0	455	98	553	100.0	-47



COLUMN 1

Classification of Current Steel Can Scrap Situation -The Summary of Questionnaire to the Scrap Processors-

We carried out hearing in regards to the quality of steel can scraps to recycling companies and steel makers which are dealing with steel can scraps to review the steel can recycling data. Major opinion from related parties are listed below.

Major current opinion from related parties

- The extraneous materials that should not be admixed are mainly plastic bags, PET bottles, non-ferrous material, and etc.
- When many extraneous materials are admixed, the steel can scraps cannot be recycled without shredding and magnetic separation processing.
- When the quality is too low, the scrap price becomes cheaper.
- Lid of steel cans which are made of aluminum can be used as reductant and temperature rising material in steelmaking process.

When low quality steel can scraps are delivered to recycler, the recycler must handle to remove extraneous materials. When many extraneous materials are admixed, the steel can scraps cannot be recycled without shredding and magnetic separation processing.

To avoid these extra processing, it is necessary for all suppliers to share information.

Example of high quality steel can scraps.

Example of low quality steel can scraps.

(Written by: Japan Steel Can Recycling Association)

Uniform Standards of Ferrous Scraps

"Uniform Standards" us the criteria used for a distribution of iron scraps, and set up according to types and grades etc. The standard listed below is using as a national standard. Iron scraps which meet the requirement mean they are a product, however, some manufacturers use their own standard since a production capacity and goods vary at each work.

Classification	Category	Grade	Dimensions (mm) Thickness	Dimensions (mm) Width or Height × Length	Unit Weight (kg)	Remarks
Carbon Steel Scrap	Heavy	Being sized by guillotine shear, gas cutting, heavy construction machines, or others, to be divided, according to thickness, size, and unit weight, into the following:				
		HS	6≦	≦500 × ≦700	≦600	
		H1	6≦	≦500 × ≦1200	≦1000	
		H2	3≦t<6	≦500 × ≦1200	≦1000	
		H3	1≦t<3	≦500 × ≦1200	≦1000	
		H4	<1	≦500 × ≦1200	≦1000	
	Press	The basic material being chiefly steel-sheet-fabricated products and being compression-formed and rectangular parallelepiped by a press machine, to be divided, according to basic materials, into the following:				
		A	W+H+L≦1800, with the max dimension ≦800			Automobiles (mainly from End of Life Vehicles)
		B	W+H+L≦1800, with the max dimension ≦800			Except for Press A and C
		C	600≦W+H+L≦1800			Cans for food/drink
	Shredded	The basic material being chiefly steel-sheet-fabricated products and being crushed by shredder and then sorted by magnetic classifier, to be divided, according to basic materials, into the following:				
		A				Automobiles (mainly from End of Life Vehicles)
		B				Except for Shredded A
	New Scrap (Shindachi)	Consisting of cutting and blanking chips produced during the manufacture of steel-sheet-fabricated products, to be divided, according to shape and degree of oxidation, into the following:				
		Shredded				Shredded
		Press A	W+H+L≦1800, with the max dimension ≦800			Hot or cold Sheet with no rust excluding coated sheet
		Press B	W+H+L≦1800, with the max dimension ≦800			Hot or cold Sheet with some rust, incl Coated sheet without harm for steel making
		Busheling A	W or H ≦ 500 × L≦ 1200			Hot or cold Sheet with no rust excluding coated sheet
		Busheling B	W or H ≦ 500 × L≦ 1200			Hot or cold Sheet with some rust, incl Coated sheet without harm for steel making
	Turning	Consisting of cutting chips, produced during the manufacture of screws, machine parts, and the like, to be divided, according to shape and degree of oxidation, into the following:				
		A				Turning of mild steel with no rust, in fine forms
		B				Turning of mild steel with some rust, in various forms
		Press	W+H+L≦1800, with the max dimension ≦800			Press of Turning of mild steel with no rust, in fine forms
Pig Iron Scrap	Cast Iron	Consisting of used castings finely crushed into blocks, to be divided, according to basic materials, into the following:				
		A			≦1000	Machinery parts, Clean Auto Blocks etc.
		B			≦1000	Charging box cast, unstripped auto blocks
	Iron Boring	Consisting of cutting chips produced during the production of castings, to be divided, according to the degree of oxidation, into the following:				
		A				Iron boring of mild casting with no rust
		B				Iron boring of mild casting with some rust

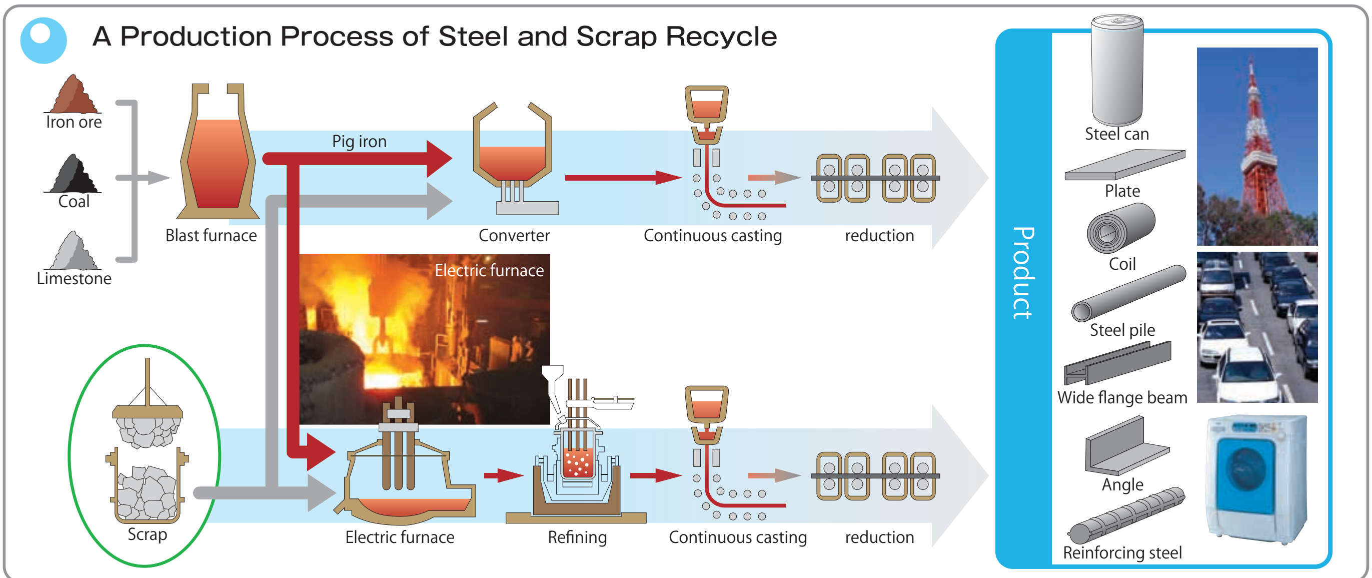
Japan Ferrous Raw Materials Association. Revised Jun 2008

2. How is Scrap Iron Recycled?

- The annual production of iron in Japan is approximately 109,840,000 tons in FY2013. Blast furnace and electric furnace methods are available to manufacture iron and steel. In Japan, 77.0% of Iron and steel is manufactured by blast furnaces and 23.0% by electric furnaces.
- Iron that remains from use in construction, automobiles, machines, can containers, etc. are recycled at iron and steel manufacturers (blast furnaces, electric furnaces, casting makers, etc.) as iron scrap.
- Iron scrap that is traded in the Japanese market (commercial scrap) amounts to 28,410,000 tons (decreasing 1,800,000t from the previous year). And 7,760,000 tons were exported in FY2014 (increasing 560,000t from the previous year).

	Production Method	Number of makers and plants
Electric furnace maker	Iron scrap is melted in electric furnaces (by discharge heat from electrodes) to manufacture steel.	47 makers with 67 works
Blast furnace maker	Iron scrap is inserted when pig iron reduced from iron ore in a blast furnace is supplied to a converter to manufacture steel.	4 makers with 18 works

A Production Process of Steel and Scrap Recycle



Domestic Iron Scrap Supply and Demand (FY 2014)

(Unit: 1,000 tons/year) Source: The Japan Ferrous Raw Materials Association

Technical Terms

【Electric furnace】
A heating chamber with a discharge heat to melt scrap iron

【Blast furnace】
A furnace used to produce pig iron from iron ore, coal and limestone

【Converter】
A furnace used to produce steel from melting pig iron and blowing oxygen into it. It is able to rotate 360 degree.

【Steel】
An iron contains less than 2% of carbon

【Pig iron】
An iron contains more than 2% of carbon

【Industrial scrap】
Scrap generated in rolling process, and consumed inside of factories

【Purchased scrap】
Scrap transacted in the scrap market

【Factory scrap】
Scrap generated in processes using steel as a material (e.g. cars, machines and shipbuilding)

【End-of-life scrap】
Scrap from dismantled buildings, disused cars, disused domestic electric equipments, and steel can scrap.

COLUMN 2

Information on Steel Works in Japan

According to annual report on steel can recycling 2013, many of municipalities made a request about for information on recycling facilities that have tour inside.
The Japan Iron and Steel Federation provides excursion across the country. If you want to access, detail is given below.

Information on Steel Works in Japan
Web Site Information http://www.jisf.or.jp/kids/iku/map.html

3 . Trends in Price of Domestic Steel Can Scraps

Factors Determining the Price of Iron Scrap

① The quality of scraps
② Changes in the supply-demand balance in each region
③ Comparative values internationally (e.g., overseas market conditions resulting from the international availability of commodities, etc.)
④ Costs of scrap collection from the market, scrap collection by scrap processors, and scrap-processing.
⑤ Costs of material price variance (iron ore and others), and an iron dissolution by blast furnace makers.

Relation between the Price of Steel Scrap and the Price of H2 (Heavy and Other General Scrap)

The price of steel can scrap moves almost in parallel with that of H2 (see the next page).The difference in price between the scrap steel cans (press C) and H2 is anywhere from 2,000 yen to 9,000 yen depending on supply and demand, overseas market trends, and its region.C press with good quality could sell at higher price than H2.

The Sale Price of Pressed Steel from Cans vs. the Base Price of Steel Can Scrap in Municipalities

The pressed steel from cans separated and processed in municipalities is delivered to steel makers via scrap processors, hauling/storage companies, and others. Thus, the sale price for the steel press in the municipalities is equivalent to the scrap purchase price by the steel manufacturers minus the amount spent on delivery via the intermediate routes.

Trend in Price of Iron Scrap

The trend of global crude steel production reached a turning point.
Iron scrap price fallen below 20,000 yen (H2) per ton.

The world crude steel production updated a record high last year. However, the most of the major countries including China, Japan, United States, Korea, Turkey, etc. started to reduce the production this year. The world crude steel production (65 countries) from this January to July is 945,840,000 tons, down 2.1%, compared with the same period of the last year.
In case of Japan, it was 61,440,000 tons, down 4.8%. Worldwide slowdown in global economy and concerning for the future seem to be a factor of the reduced production. The world steel industry that continued to increase the production until now reach a turning point. In addition, it brings a feeling of surplus and the price of steel materials goes down worldwide. Therefore the demand for steel raw materials decrease, and the iron scrap price fell. Moreover, iron ore and coal for coke making decline in price, too. The purchase price of H2 (best quality) of Japanese steel makers in 2014 was an average of 30,900 yen per 1 ton, but as for this January to August.it was 23,800 yen. The price is still going down and it is considered to be sure that H2 falls below 20,000 yen afterwards.

Price Trend of Pressed Steel from Cans

The price trend of pressed steel cans.

The requirement for the high evaluation to quality is unchanged although the price of pressed steel cans falls, The iron scrap price goes down in the inside and outside, and the price of pressed steel cans drops. The high quality of steel materials being required. However, the evaluation for the quality of pressed steel cans is unchanged because of being clear in quality and ingredient and increase presence as raw material for steel making which generate stably. But a drop in price is inevitable while the whole iron scrap price goes down. The average price of pressed steel cans was 25,600 yen per ton in Kanto District last year, but as for from this January to August, it was 19,200 yen, falling below 20,000 yen. Whereas index item, H2 declined 6,900 yen from last year's average price, pressed steel cans dropped only 6,400 yen. It may be said that it is the outcome of a high evaluation for the quality and we can see that pressed steel cans of high quality is dealing with a high price continuously.

(¥/t)

	Average in 2005	Average in 2006	Average in 2007	Average in 2008	Average in 2009	Average in 2010	Average in 2011	Average in 2012	Average in 2013	Average in 2014	Average in 2015 (Jan-Aug)
Kanto region	17,200	20,400	27,800	36,000	15,100	23,700	25,900	19,400	26,200	26,000	19,200
Osaka region	10,600	12,500	23,600	25,900	15,200	22,300	25,400	20,000	24,600	24,100	17,600
Representative factory in West Japan	20,700	24,700	35,400	42,900	20,400	30,000	32,100	25,100	31,700	31,800	21,700

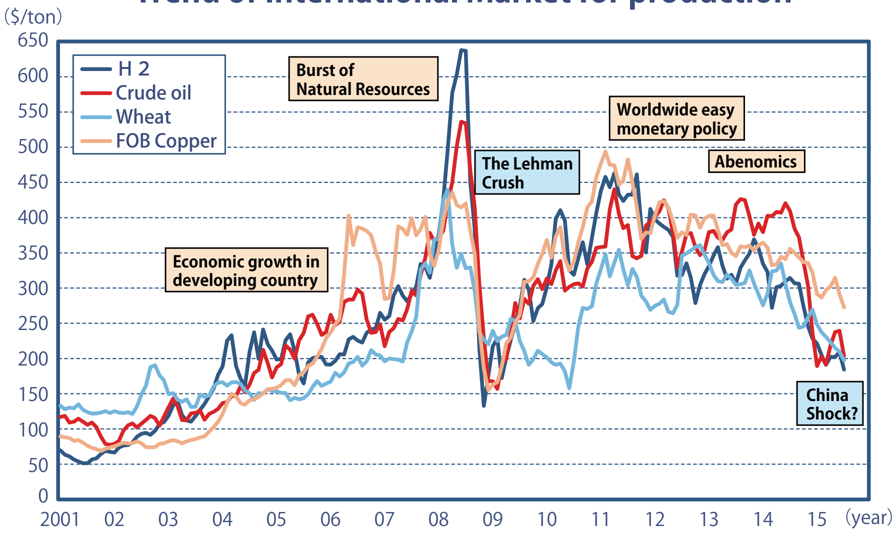
For more information about the price trend of pressed steel from cans

Nikkan Shikyo Tsushinsha Co., Ltd. publishes "MRM (Metal Recycle Monthly)" that carries international and domestic scrap market trends, topics, hot issues, and explanation of recycling laws. **TEL: +81-3-3864-6021**

Iron Scrap Prices at Its Turning Point, Falling to the Level Before the Steep Rise

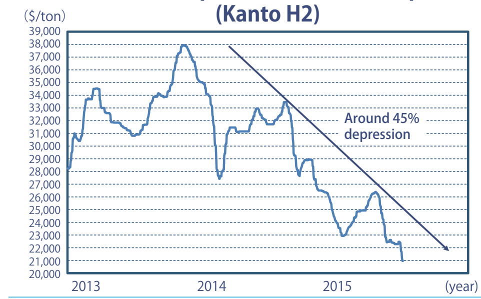
Iron scrap price, including steel can scrap, have continued to drop as of August 2015. This is due to the reduction of demand domestically and abroad in the midst of a global downturn in the production of crude steel. However, as shown in the graph on the left, the drop in price is not exclusive to iron scrap, but extends to other products. In fact, many products that are traded internationally have fallen. The graph on the left has the price of dollar-denominated H2, the representative variety in Japan, as its core, and the change in the price of crude oil, wheat, and copper is overlapped. Since the trading unit varies, the unit has been adjusted; however, the timing of the prices rising and falling is very similar. Iron scrap price is not determined only by supply and demand, but also coupled with the international commodity market trends from a long term perspective.

Trend of International Market for production



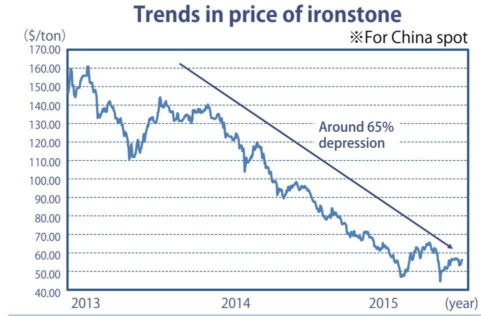
※The price of each products have different unit or standard so that the graph is adjusted with price range.
(H2 : $ / ton, Crude oil : $ / 4bbl, Wheat : $ / ton, FOB Copper : $ / 0.05ton)
※※References : H2 is from Nikkan Shikyo Tsushinsha Co,ltd. Others are from IMF

Trends in price of steel can scraps (Kanto H2)



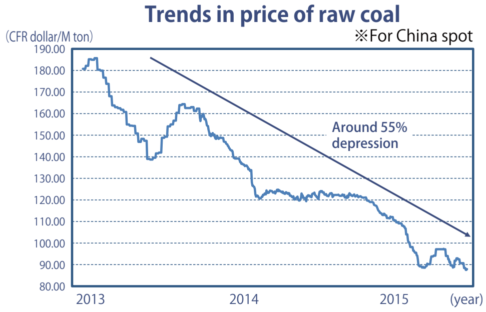
Trends in price of ironstone

※For China spot



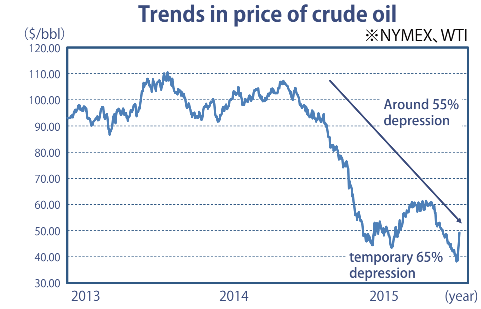
Trends in price of raw coal

※For China spot



Trends in price of crude oil

※NYMEX, WTI



The "Economic Growth of the Emerging Country" and "Monetary Easing" Leading to a "Plateau Rate

International commodity prices in the past 15 years have continued its rapid increase until 2008 with the remarkable economic growth of the "emerging countries" like China. After hitting a record low in 2001, the iron scrap price continued to soar to a record high just before the "Lehman Shock". But with the "Lehman Shock" in the autumn of 2011, the price fell drastically. However, due to the "monetary easing" policy implemented worldwide to address the issue, the international commodity prices began to rebound. Iron scrap price in the past 10 years is at a historically high range. What supported this was the economic growth and the global monetary easing in the emerging countries. It can be said that the market was created by the "demand" of iron scrap expanding worldwide and the influx of "money" mutually influencing each other.

But then, the outlook of the US monetary easing policy ending and the interest rate hike had a significant impact on price movements of subsequent commodity prices. Furthermore, the "China Shock", that is the "devaluation of the yuan" and the "drops of the Chinese stocks" in August this year and the subsequent "chain of global stock plunge", led to the fear of economic global outlook and resulted in the fall of the international commodity prices.

Iron Scrap Market at Its "Turning Point" with the Drops in International Commodity Market

It seems that the iron scrap market is approaching its turning point. According to newspaper reports, several analysts pointed out that the international commodity prices of items such as crude oil and iron ore will generally maintain its current low level for the time being. When the demand is growing, an "anticipation of a rise" would occur, and the commodity price will be evaluated higher than the actual growth in demand. However, when the demand shows signs of a decline, the evaluation of the commodities will fall even further than the actual decrease in demand. The decrease in the global crude steel production indicates the greater decline in its prices. When looking at the recent related commodities, the global crude steel production is down 2% year-on-year; however, crude oil price is down about 55%, iron ore about 65% and coking coal 55%. In contrast, iron scrap price dropped about 45%. Although it is difficult to predict the market, considering the correlation with the other commodities, iron scrap price may fall to the level of the other commodities. When the price soared, it was described as the "commodity prices are in a new stage". However, that "stage" is over, and it seems that we are heading towards the "next stage".

1. How Many Municipalities Sort Out Steel Cans?

The Implementation of "the Questionnaires on the Recycling of Steel Cans" in FY2014

We carried out a questionnaire survey annually to figure out the present condition of sorted collection practices by municipalities, such as collection methods and conditions of recycling facilities focusing on the recycling of steel cans.

Subjected research period：From April 2014 to March 2015
Research period：From June to July 2015
Research subject：The cities all over Japan and the 23 wards in Tokyo (813 Wards and cities)
The number of returned questionnaires：732 Wards/ Cities
The return rate：90.0%
The population coverage rate：86.2%

Note: Total population (estimated) is 127,083,000 as of October 1st, 2014 (data from the Statistics Bureau).

People sorted out recyclables as "Cans"

The Rate of Municipalities Practicing Sorted Collection

The trend has not changed since 2008. Most of municipalities are practicing sorted waste.

	FY2008		FY2011		FY2014	
	# of wards and cities	rate (%)	# of wards and cities	rate (%)	# of wards and cities	rate (%)
Total	806	—	810	—	813	—
The number of returned questionnaires(The return rate)	735	91.2	714	88.1	732	90.0
Practiced throughout the Municipal District	726	98.8	703	98.5	725	99.0
Practiced in parts of the Municipal District	7	1.0	9	1.3	6	0.8
Not practiced	2	0.3	2	0.3	1	0.1

The Rate of Municipalities Collecting Resource Waste by Items (included collection in model regions)

Steel cans for beverages, aluminum cans, bottles, and PET bottles have been designated to be collected separately at more than 90% of the municipalities from FY2008. Especially, the number of collecting paper packaging has increased 15% since FY2007. More than 40% of the municipalities collect steel cans separately.

	FY2008		FY2011		FY2014	
	# of wards and cities	rate (%)	# of wards and cities	rate (%)	# of wards and cities	rate (%)
Steel cans	704	96.0	685	96.2	707	96.7
Aluminum cans	707	96.5	687	96.5	707	96.7
Glass bottles	722	98.5	703	98.7	720	98.5
PET bottles	693	94.5	682	95.8	704	96.3
Cartons	544	74.2	558	78.4	575	78.7
Cardboard	605	82.5	600	84.3	619	84.7
Paper container Note1	268	36.6	304	42.7	378	51.7
Plastic container Note1	444	60.6	452	63.5	481	65.8
Metals	293	40.0	303	42.6	322	44.0
Waste paper	603	82.3	597	83.8	617	84.4
Fabric	366	49.9	376	52.8	399	54.6
Spray cans	-	-	-	-	337	46.1
Small household appliances	-	-	-	-	208	28.5
Others Note2	302	41.2	330	46.3	306	41.9
Total	733	100.0	712	100.0	731	100.0

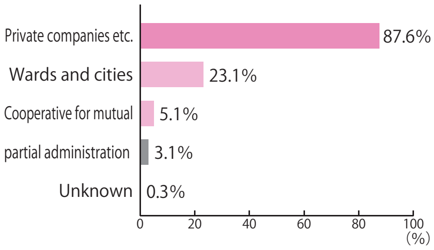
Note1: [Plastic container and packaging] and [Paper container and packaging] etc. include collection in model regions.
Note2: [Others] represents food trays, used cooking oil, kitchen waste, pruned branches, used batteries, fluorescents, etc.

2. How Do Municipalities Collect Steel Cans?

Agencies of Collecting Steel Cans (multiple answers)

To be an effective collecting cost, only 23.8% of municipalities collect by own and most of them (87.6%) does contract collection.

FY2014 (n=707)



Items Discharging together with Steel Cans (multiple answers)

More than 80% of municipalities collect steels cans with beverage aluminum cans,and food cans. Since 2008, half of municipalities has started collecting spray cans separately.

	FY2008		FY2011		FY2014	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Only beverage steel can	-	-	14	2.0	12	1.7
Beverage aluminum cans	-	-	582	85.0	603	85.3
Food cans	639	90.8	604	88.2	629	89.0
General cans	628	89.2	575	83.9	594	84.0
Spray cans	395	56.1	279	40.7	289	40.9
18 litter cans	185	26.3	112	16.4	117	16.5
Glass bottles	-	-	141	20.6	148	20.9
Metals	-	-	87	12.7	93	13.2
Pet bottles	-	-	44	6.4	45	6.4
Others	-	-	38	5.5	49	6.9
Total	704	100.0	685	100.0	707	100.0

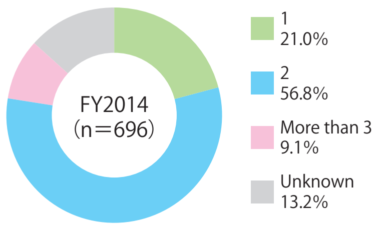
Recycling Route of Steel Cans (multiple answers)

98.4% of the municipalities collect steel cans. Other than municipalities collection rout, there are 52.6% of group collection, 17.4% of site collection, and 1.4% of store collection for the steel cans.

	FY2014	
	# of wards and cities	rate(%)
Sorted collection	696	98.4
Collection from noncombustible waste	86	12.2
Collection from combustible waste	8	1.1
Group Collection	372	52.6
Site collection	123	17.4
Store Collection	10	1.4
Total	707	100.0

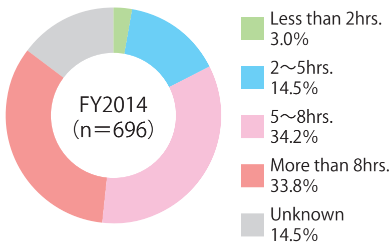
Number of Operation Staff per a Collection Truck per Day

More than half of municipalities collect steel cans by 2 staffs including a driver.



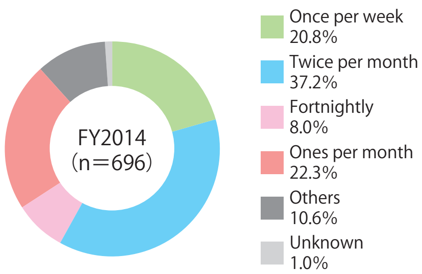
Hours for Collection per Day

Nevertheless, it depends on collecting items and population, most of municipalities take more than 5 hours to collect steel cans.



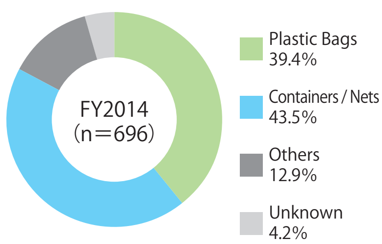
Frequency of steel cans collection

Most of municipalities collect steel cans twice per month.



Types of Rubbish Bin

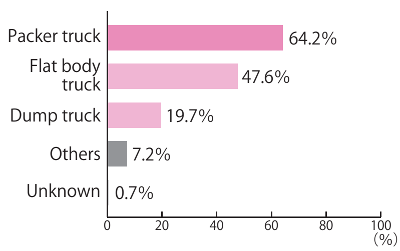
Normally the wastes are disposed by plastic bags, bulk containers or nets.



Types of Collection Trucks (multiple answers)

64.2% of municipalities use packer trucks and 47.6% use flat body trucks.

FY2014 (n=696)



3. How Are Steel Cans Recycled?

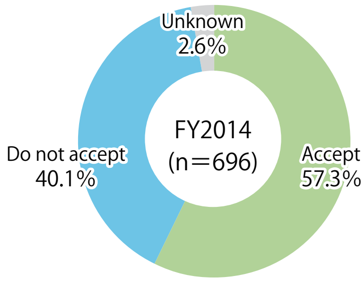
Recycling Facilities of Cans

More than 40% of municipalities hold own intermediate process facilities. The number of third sectors facilities are decreased dramatically.

	FY2008		FY2011		FY2013	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Wards and cities	288	45.7	299	43.9	294	42.7
Cooperative for mutual partial administration	135	21.4	132	19.4	138	20.0
Private companies etc.	207	32.9	210	30.8	213	30.9
Third sectors	44	7.0	4	0.6	5	0.7
Others	-	-	36	5.3	39	5.7
Total	630	100.0	681	100.0	689	100.0

Whether the Facilities Accept Used Steel Cans from the Businesses

57.3% of facilities accept used steel cans from the businesses.



Selection Process and Forms after Selection of Cans

Before selection process and forms of steel cans, 27.3% for magnetic and hand separation, 24.3% for magnetic only, 15.8% for magnetic and machine separation, and 11.2% for magnetic, hand and machine separation. Some municipalities directly sell it without separation.

	FY2014	
	# of wards and cities	rate(%)
Magnetic & hand separation	190	27.3
Magnetic separation only	169	24.3
Magnetic & machine separation	110	15.8
Magnetic & machine separation (except cans) & hand separation (except cans)	78	11.2
Hand separation only	24	3.4
No separation	35	5.0
Others	28	4.0
Unknown	62	8.9
Total	696	72.7

About 90% of steel cans are pressed. 3.7% of municipalities do not separate the steel cans which goes directly to recyclers.

	FY2014	
	# of wards and cities	rate(%)
Press (Block-shape)	592	85.1
Round cans etc.	24	3.4
Shredder	23	3.3
Press (individual cans)	2	0.3
No processing	26	3.7
Others	22	3.2
Unknown	7	1.0
Total	696	100.0

Recommended Selection and Processing Forms of Steel Cans

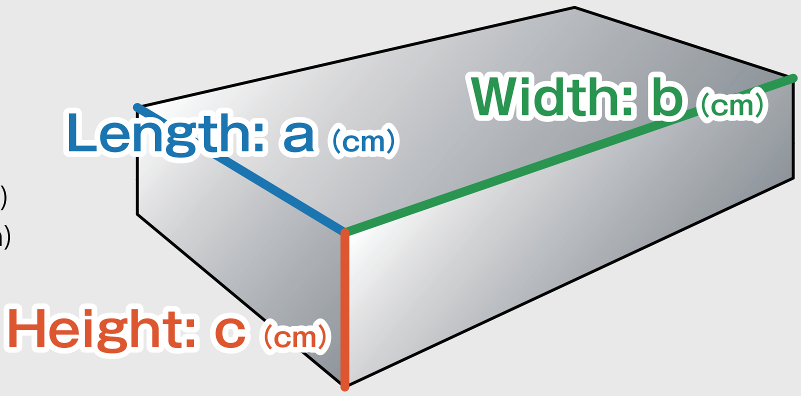
Conformity to the segregation standard specified in the Containers and Packaging Recycling Law is the most necessary to smoothly recycle steel cans as resources.

Recommended Selection and Processing Forms of Steel Cans

Source: The Japan ferrous raw materials association, "Uniform Standards of Ferrous Scraps"

[Size]
- Maximum Length ≦ 80(cm)
- 60(cm) ≦ a+b+c ≦ 180(cm)

[Bulk specific gravity]
- More than 0.6t/m^3



It is regulated not to contain foreign materials by legislation however, it still has identified lots of foreign materials. Please take a caution.

4. How Much Steel Can is Collected by Municipalities?

■The Total Recycling Quantity of Steel Cans in Japan is Estimated about 167,000 tons

The recycling quantity of steel cans for the 666 wards and cities that answered the questionnaire was 130,497 tons based on the record in FY2014. It translates into the recycling of a total of 167,291 tons nationwide.

■The Amount of Steel Can Recycled per Capita is 1.29kg Annually Based on the Record in FY2014.

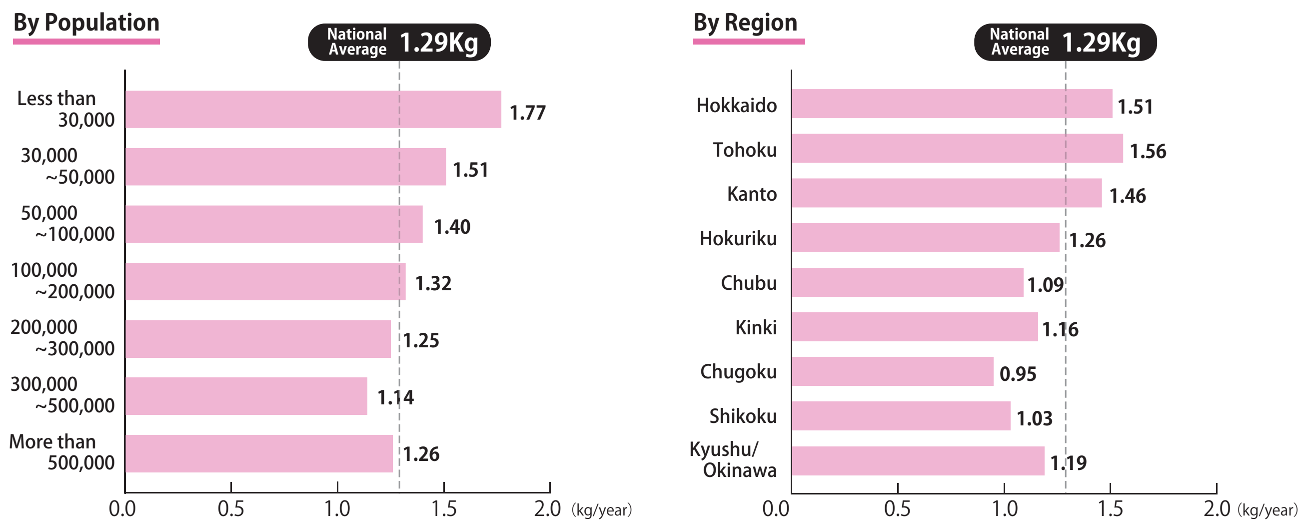
The average quantity of recycling is 1.29kg which decreases 0.06kg compare to last year. The highest recycling ratio is shown under the population of 30,000 and also Hokkaido, Tohoku and Kanto regions.

Recycling Quantity of Steel Cans per Capita
(estimated based on the record in FY2014)

(Unit: t/yr)

	# of wards and cities	Recycling quantity of steel cans per capita
Press	568	110,556
Round cans etc.	22	1,860
Shredder	20	3,462
Delivery to recycling manufactures	23	3,479
Pressing individual cans	2	175
Others	20	10,041
Unknown	11	923
Total	666	130,497

Recycling Quantity of Steel Cans per Capita (estimates based on the record in FY2014)



COLUMN 3

The Quality of Steel Can Scraps Improves Year by Year

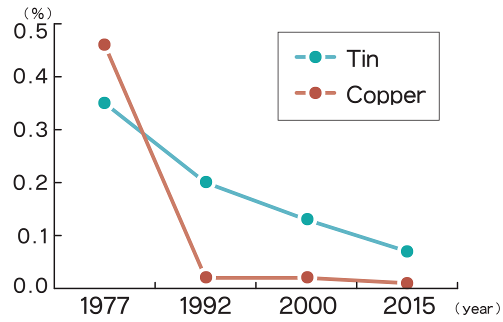
Steel can scrap conventionally involved a difficult problem of tin-plating for surface treatment adversely affecting the raw material of steel. In addition, copper from motors, wires and the like were included in the scrap due to inefficient foreign matter removal.

Substantial improvement was made in recent years. Use of tin in surface treatment decreased sharply, and tin-free steels (TFS) are increasingly used (improvement of raw materials). There is no problem of excess copper content at present.

Paints, plastics and other foreign matter are burned and separated as they are melted at a high temperature of 1,600 C, and aluminium used for can lids can effectively be used in electric furnace makers as reductant.

(Written by: Japan Steel Can Recycling Association)

Results from the Component Analyses of the Steel Scrap (C press)



The research conducted by Steel Can Recycling Association

5. How Are Steel Cans Collected from Noncombustible and Combustible Waste?

■The Amount of Steel Cans Collected from Noncombustible Waste is Estimated to be 26,000 tons totally

According to the research data collected from 538 municipalities, the amount of iron collected is 258,728 tons in FY2014 (including 18,407 tons of steel can). This translates into the recycling of 367,643 tons nationwide (including 26,155 tons of steel can).

■The Amount of Steel Cans Collected from Combustible Waste is Estimated to be 4,000 tons totally.

According to the research date collected from 225 municipalities, the amount of iron collected is 56,833 in FY2014 (including 1,003 tons of steel cans). This translates into the recycling of 246,211 tons nationwide (including 4,346 tons of steel can).

The amount of Steel Cans Collected from Noncombustible and Combustible Waste (estimated based on the record in FY2014)

(Unit: t/yr)

Noncombustible Waste	# of wards and cities	The amount of iron collected	The amount of steel can collected
Shredding only	17	8,757	589
Magnetic separation after Shredding	226	116,733	7,833
Magnetic separation and press after shredding	103	66,311	5,986
Press after magnetic separation	16	5,245	570
Delivery to recycling manufacture	86	22,173	1,894
Others	71	36,236	1,366
Unknown	19	3,273	170
Total	538	258,728	18,407

Note: In the 23 wards, Tokyo, the recycling amount of ferrous metal from noncombustible waste is calculated from data of the clean association of Tokyo 23.

(Unit: t/yr)

Combustible Waste	# of wards and cities	The amount of iron collected	The amount of steel can collected
Magnetic separation only	91	17,000	455
Press after magnetic separation	15	1,495	506
Melting process	38	26,995	-
Others	51	9,298	9
Unknown	30	2,045	33
Total	225	56,833	1,003

Note: "melting process" is excluded due to containing other metals.

Form of Processing Ferrous Metals at Waste Disposal Facilities in FY2014

The highest ration of processing at noncombustible waste is press after magnetic separation (33.9%). On the other hand, the highest ration of processing at combustible waste is direct to landfill after incineration (24.2%).

Noncombustible Waste	# of wards and cities	rate(%)
Shredding only	21	2.9
Magnetic separation after shredding	248	33.9
Magnetic separation and press after shredding	124	16.9
Press after magnetic separation	19	2.6
Landfill after magnetic separation	5	0.7
Direct to landfill	23	3.1
Delivery to recycling manufactures	110	15.0
Others	89	12.2
Unknown	93	12.7
Total	732	100.0

Combustible Waste	# of wards and cities	rate(%)
magnetic separation only	108	14.8
Press after magnetic separation	22	3.0
Melting process	54	7.4
Direct to landfill	177	24.2
Others	109	14.9
Unknown	262	35.8
Total	732	100.0

Sales Condition According to the Form of Processing Ferrous Metals in FY2014

Both noncombustible and combustible waste scrap are mostly sold with charge. However, once there is extraneous material admixed except iron, there is a case of inverse onerous contract since it takes more time efforts to separate and there are some municipalities that do inverse onerous.

Noncombustible Waste		With charge	Inverse onerous contract	Without charge	Unknown	Total
Shredding only	# of wards and cities	18	1	0	2	21
	rate(%)	85.7	4.8	0.0	9.5	100.0
Magnetic separation after shredding	# of wards and cities	194	6	4	44	248
	rate(%)	78.2	2.4	1.6	17.7	100.0
Magnetic separation and press after shredding	# of wards and cities	100	1	2	21	124
	rate(%)	80.6	0.8	1.6	16.9	100.0
Press after magnetic separation	# of wards and cities	15	0	0	4	19
	rate(%)	78.9	0.0	0.0	21.1	100.0
Delivery to recycling manufactures	# of wards and cities	71	7	8	24	110
	rate(%)	64.5	6.4	7.3	21.8	100.0
Others	# of wards and cities	60	3	4	22	89
	rate(%)	67.4	3.4	4.5	24.7	100.0
Total	# of wards and cities	458	18	18	117	611
	rate(%)	75.0	2.9	2.9	19.1	100.0

Combustible Waste		With charge	Inverse onerous contract	Without charge	Unknown	Total
magnetic separation only	# of wards and cities	88	6	7	7	108
	rate(%)	81.5	5.6	6.5	6.5	100.0
Press after magnetic separation	# of wards and cities	14	0	3	5	22
	rate(%)	63.6	0.0	13.6	22.7	100.0
Melting process	# of wards and cities	38	2	2	12	54
	rate(%)	70.4	3.7	3.7	22.2	100.0
Direct to landfill	# of wards and cities	2	2	23	150	177
	rate(%)	1.1	1.1	13.0	84.7	100.0
Others	# of wards and cities	37	6	8	58	109
	rate(%)	33.9	5.5	7.3	53.2	100.0
Total	# of wards and cities	179	16	43	232	470
	rate(%)	38.1	3.4	9.1	49.4	100.0

Average Sales Price According to the Form of Processing Ferrous Metals (only in items with charge)

Noncombustible Waste

In terms of recent depression of metal scrap price, average sales price has dropped from ¥28,432 to ¥15,915 per tons since 2008.

(Unit: ¥/t)

	FY2008	FY2011	FY2014
Shredding only	29,527	13,818	14,609
Magnetic separation after shredding	28,912	22,502	15,979
Magnetic separation and press after shredding	28,070	24,525	15,966
Press after magnetic separation	25,293	23,019	15,513
Delivery to recycling manufactures	26,878	17,909	16,266
Others	30,240	21,377	15,925
Annual average	28,432	22,189	15,914

Combustible Waste

Average sales price of combustible waste is ¥11,904 per tons which price is lower than noncombustible waste. The sales price are excluded melting process due to wide range of amount.

(Unit: ¥/t)

	FY2014
magnetic separation only	11,858
Press after magnetic separation	12,212
Melting process	-
Direct to landfill	-
Others	12,627
Annual average	11,904

6. How Much Pressed Steel from Cans Do Municipalities Sell?

Pricing Conditions of Steel Cans according to the Forms of Selling in FY2014

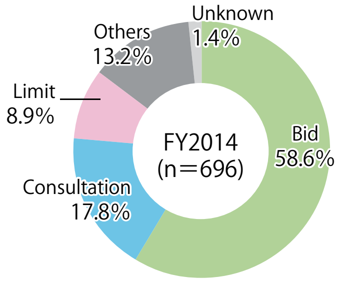
Most of the steel cans are sold with charge regardless of how they are sold, but the pressed cans are inverse onerous contract in some municipalities. The reason of inverse onerous contract is such as delivering directly to recycler cost consignment fee for processing.

		Press	Shredder	Pressing individual cans	Round cans	Mixed round cans (aluminum & steel)	Others	Total
With charge	# of wards and cities	477	20	5	59	63	25	649
	rate(%)	97.5	95.2	100.0	92.2	88.7	80.6	95.3
Without charge	# of wards and cities	10	0	0	1	4	1	16
	rate(%)	2.0	0.0	0.0	1.6	5.6	3.2	2.3
Inverse onerous contract	# of wards and cities	2	1	0	4	4	5	16
	rate(%)	0.4	4.8	0.0	6.3	5.6	16.1	2.3
Total	# of wards and cities	489	21	5	64	71	31	681
	rate(%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note1: Quoted prices apply to the pressed steel from cans sold by the municipalities for delivery to recycling manufacturers (not to the final processed form output from the recycling facilities).
Note2: The chart excludes answers that include both pressed steel from cans and scrap iron collected from noncombustible wastes as commodities sold.

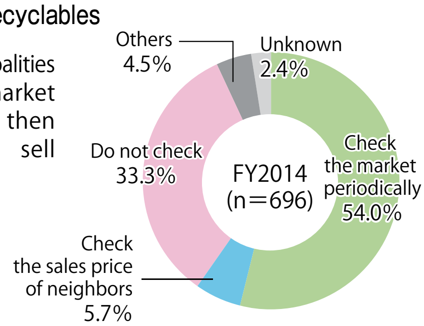
Methods to Decide Sales Price of Steel Cans

More than half of the municipalities decide the selling price by bidding.



Research on the Market for Recyclables

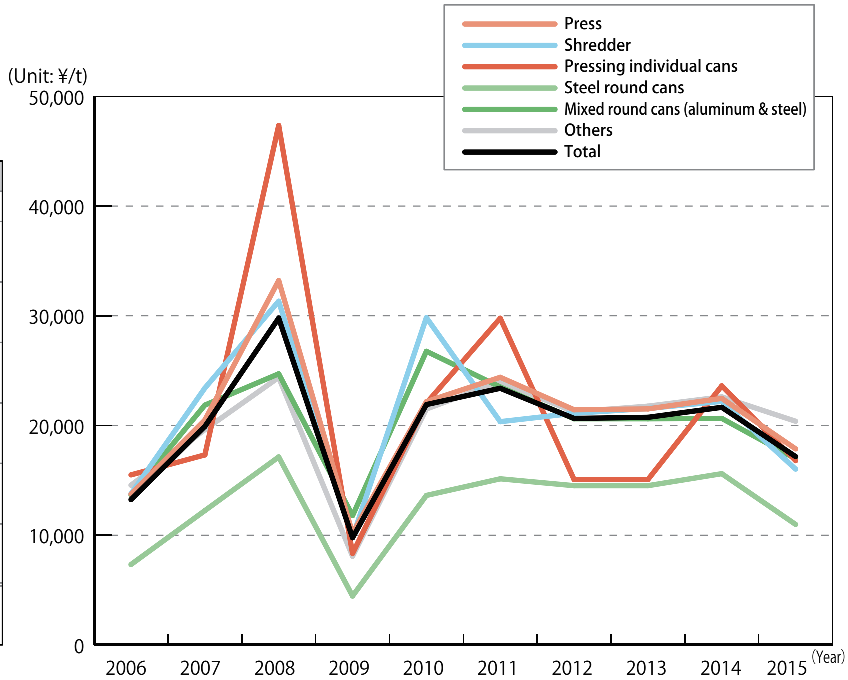
A half of municipalities check the market periodically, then contract or sell recyclables.



Average Sales Price according to the Forms of Sales

Average sales price has been stable over ¥20,000 since 2010, however the price has downed to under ¥20,000 in 2015.

	June-July, 2015	
	# of wards and cities	Price (¥/t)
Press	427	17,869
Shredder	18	16,026
Pressing individual cans	5	16,792
Steel round cans	54	10,981
Mixed round cans (aluminum & steel)	53	16,963
Others	21	20,389
Total	578	17,167

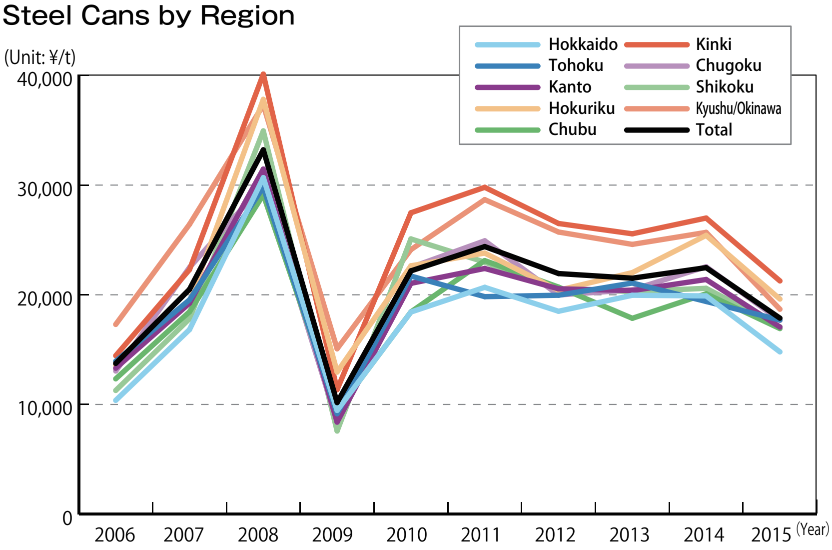


Note: Prices show the latest price in each year

Average Sales Price of Pressed Steel Cans by Region

Average sales price of pressed steel cans increased up to ¥4,125 per tons from 2006. It seems like there is a higher sales price among Kinki, Kyushu, Okinawa, and Hokuriku region.

	June-July, 2015	
	# of wards and cities	Price (¥/t)
Hokkaido	30	14,795
Tohoku	38	17,700
Kanto	126	17,056
Hokuriku	16	19,609
Chubu	43	16,918
Kinki	55	21,262
Chugoku	35	17,665
Shikoku	21	17,081
Kyushu/Okinawa	63	18,683
Total	427	17,869

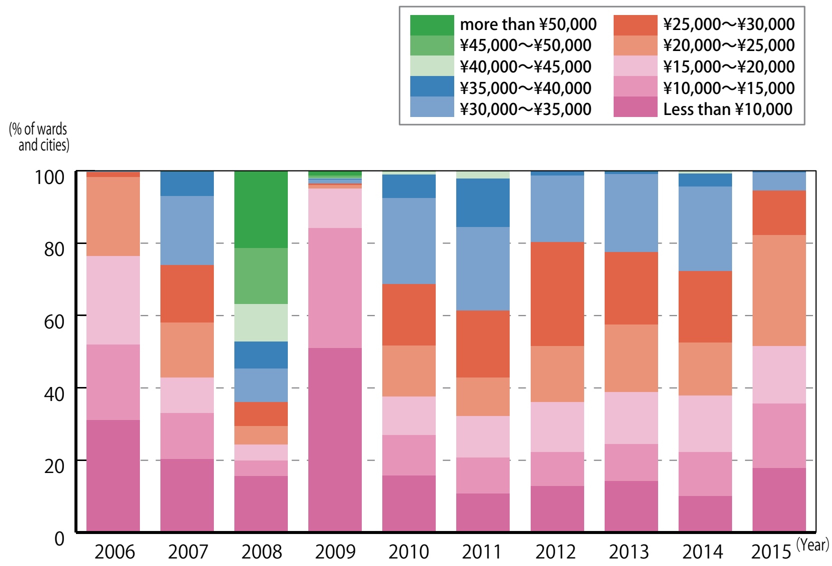


Note: Prices show the latest price in each year

Price Distribution of Pressed Steel from Cans

Price of pressed steel cans peaked in 2008, and dropped then gradually recovered in 2010. However, this year, the price has dropped and most of municipalities sold around ¥20,000 to ¥25,000 per tons.

	June-July, 2015	
	# of wards and cities	Price (¥/t)
Less than ¥10,000	76	17.8
¥10,000~¥15,000	76	17.8
¥15,000~¥20,000	68	15.9
¥20,000~¥25,000	131	30.7
¥25,000~¥30,000	53	12.4
¥30,000~¥35,000	21	4.9
¥35,000~¥40,000	2	0.5
¥40,000~¥45,000	0	0.0
¥45,000~¥50,000	0	0.0
More than ¥50,000	0	0.0
Total	427	100.0



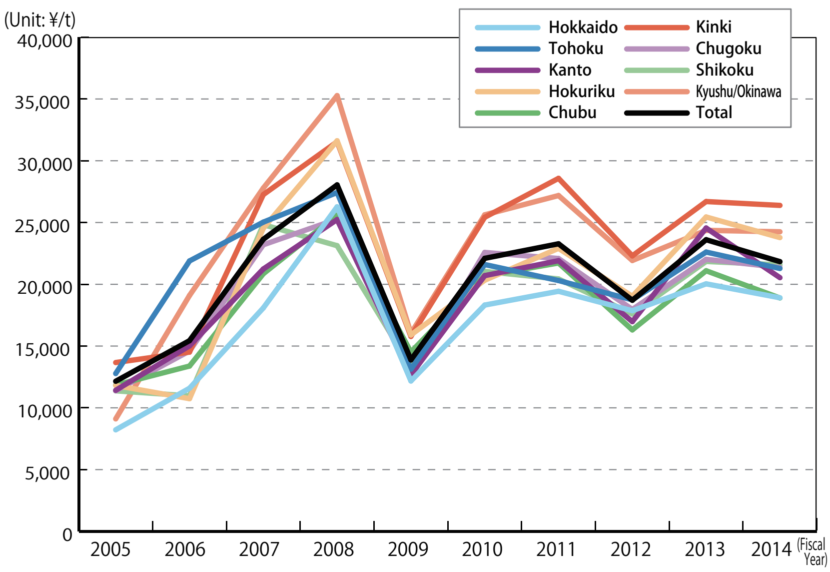
# of wards and cities	441	409	472	445	445	422	436	431	409	427

Note: Prices show the latest price in each year

Average Sales Price of Pressed Steel from Cans by the Fiscal Year

According to average sales price of pressed steel cans by region, it has been sold around ¥10,000 per ton until FY2006. The price has increased from 2005 in Tohoku region but it has dropped in FY2009 and FY2014.

	FY2014	
	# of wards and cities	Price (¥/t)
Hokkaido	30	18,909
Tohoku	38	21,281
Kanto	122	20,538
Hokuriku	16	23,782
Chubu	43	18,893
Kinki	52	26,389
Chugoku	33	21,362
Shikoku	21	21,573
Kyushu/Okinawa	61	24,253
Total	416	21,837



1 . How Many Municipalities Practice Group Collection?

About 80% of Municipalities Practice Group Collection Programs

The rate of municipalities involvement in group collection, all forms included is 80.9%. This would probably be higher if resource collections performed privately were included. All of municipalities where population is more than 500,000, conduct practice group collection.

People are sorting recyclable wastes

The Rate of Practicing Group Collection

80.9% of municipalities are practicing group collection, and about 80% of them are involving in the system to some extent. However, the rate has been flat since 2008.

	FY2008		FY2011		FY2014	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Practice	593	80.7	583	81.7	589	80.9
Do not practice	111	15.1	97	13.5	94	12.9
Unknown	27	3.7	34	4.8	43	5.9
Others	4	0.5	0	0.0	2	0.3
Total	735	100.0	714	100.0	728	100.0

Note: [Do not practice] and [Unknown] include municipalities that have no information because group collection is performed privately.

The Rate of Practicing Group Collection according to the Scale of Population in FY2014

In large cities where more than 500,000 people reside conduct practicing group collection, however the trend indicates that the ratio gets lesser in small cities. Others are municipalities do not involve in practicing group collection but some groups like school or community does it by themselves.

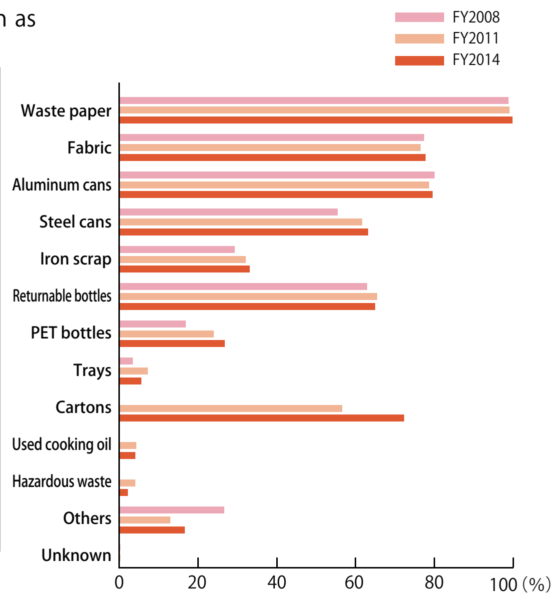
	Practice		Do not practice		Unknown		Others		Total	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)	# of wards and cities	rate(%)	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Less than 30,000	38	52.8	22	30.6	12	16.7	0	0.0	72	100.0
30,000～50,000	113	74.8	26	17.2	12	7.9	0	0.0	151	100.0
50,000～100,000	196	84.5	23	9.9	12	5.2	1	0.4	232	100.0
100,000～200,000	126	86.3	14	9.6	5	3.4	1	0.7	146	100.0
200,000～300,000	41	89.1	4	8.7	1	2.2	0	2.0	46	100.0
300,000～500,000	43	87.8	5	10.2	1	2.0	0	0.0	49	100.0
More than 500,000	32	100.0	0	0.0	0	0.0	0	0.0	32	100.0

Target Item for Group Collection (multiple answers)

63.2% of municipalities collect steel cans in group collection. Items such as waste paper, cartons are collected in most of municipalities.

	FY2008		FY2011		FY2014	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Waste paper	586	98.8	578	99.1	588	99.8
Fabric	459	77.4	446	76.5	458	77.8
Aluminum cans	475	80.1	459	78.7	468	79.5
Steel cans	329	55.5	360	61.7	372	63.2
Iron scrap	174	29.3	187	32.1	195	33.1
Returnable bottles	373	62.9	382	65.5	382	64.9
PET bottles	100	16.9	140	24.0	158	26.8
Trays	20	3.4	42	7.2	33	5.6
Cartons	-	-	330	56.6	426	72.3
Used cooking oil	-	-	25	4.3	24	4.1
Hazardous waste	-	-	24	4.1	13	2.2
Others	158	26.6	76	13.0	98	16.6
Unknown	2	0.3	1	0.2	0	0.0
Total	593	100.0	583	100.0	589	100.0

Note1: [Others] indicates plastic containers for beer, mixed paper, plastic items, etc.
Note2: [Used cooking oil] and [Hazardous waste] are added since FY2011



2. How Do Municipalities Participate in Group Collection?

Participating Conditions of Municipalities toward Group Collection (multiple answers)

As the supporting measures by municipalities, 95.1% of them granted are financial incentives for practicing group, followed by PR (50.1%), and subsidies to collecting companies, and appeal to citizens (24.8%). Number of grants for practicing groups have increased and number of subsidies to collecting companies have decreased since FY 2008.

	FY2008		FY2011		FY2014	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Provide grants	553	93.3	539	92.5	560	95.1
PR	242	40.8	267	45.8	295	50.1
Provide subsidies	166	28.0	150	25.7	146	24.8
Appeal to citizens	125	21.1	135	23.2	146	24.8
Provide equipments	47	7.9	45	7.7	41	7.0
Coordination	58	9.8	76	13.0	77	13.1
Others	18	3.0	14	2.4	30	5.1
Unknown	22	3.7	18	3.1	7	1.2
Total	593	100.0	583	100.0	589	100.0

Grants to Practicing Groups for General Recyclables

¥3-5/kg (33.2%) is the highest ratio and second highest ratio is ¥5-7/kg (25.0%) and then less than ¥3/kg (21.1%).

	FY2008		FY2014	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Less than ¥3/kg	113	20.4	119	21.1
¥3～¥5/kg	167	30.2	187	33.2
¥5～¥7/kg	138	25.0	141	25.0
¥7～¥10/kg	58	10.5	61	10.8
More than ¥10/kg	21	3.8	15	2.7
Unknown	56	10.1	41	7.3
Total	553	100.0	564	100.0

Note: [Total] indicates the number of wards and cities providing financial aids toward groups.

Subsidies to Collecting Companies for General Recyclables

In FY2008, ¥3-5/kg is shared more than half but now is only 40%. ¥5-7/kg and \7-10/kg are increased.

	FY2008		FY2014	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Less than ¥3/kg	87	52.1	55	37.4
¥3～¥5/kg	40	24.0	33	22.4
¥5～¥7/kg	11	6.6	18	12.2
¥7～¥10/kg	3	1.8	7	4.8
More than ¥10/kg	5	3.0	3	2.0
Unknown	21	12.6	31	21.1
Total	167	100.0	147	100.0

Note1: [Total] indicates the number of wards and cities providing financial aids toward companies.
Note2: It does not show the average price since calculation system is varied in each municipality.

Grants for Steel Cans

¥5-7/kg is the highest ratio for 13.3%.

	FY2008		FY2014	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Less than ¥3/kg	30	5.4	50	8.9
¥3～¥5/kg	60	10.8	74	13.1
¥5～¥7/kg	60	10.8	75	13.3
¥7～¥10/kg	26	4.7	25	4.4
More than ¥10/kg	15	2.7	15	2.7
Unknown	362	65.5	325	57.6
Total	553	100.0	564	100.0

Note: [Total] indicates the number of wards and cities providing financial aids for steel cans.

Subsidies for Steel Cans

Less than ¥3/kg is the highest ratio and the ratio has been stable since 2008 FY.

	FY2008		FY2014	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Less than ¥3/kg	23	13.8	16	10.9
¥3～¥5/kg	10	6.0	15	10.2
¥5～¥7/kg	4	2.4	6	4.1
¥7～¥10/kg	2	1.2	1	0.7
More than ¥10/kg	4	2.4	1	0.7
Unknown	124	74.2	108	73.4
Total	167	100.0	147	100.0

Note: [Total] indicates the number of wards and cities providing financial aids for steel cans.

3 . How Do Municipalities Participate in Site Collection?

The site collection is located in city council or public facilities as a complementary role so that some wards and cities play site collection to collect batteries or hazardous waste which is not collected in sorted waste.

Site Collection Carried Out by Municipalities (multiple answers)

The ratio of involvement of site collection in municipalities have diminished since FY 2011 but has increased in public facilities.

	FY2011		FY2014	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Set out boxes at public facilities	369	51.7	410	56.0
Set out boxes at stores	151	21.1	92	12.6
Set out boxes at vacant lots and parks	43	6.0	37	5.1
Set out boxes at voluntary places	47	6.6	31	4.2
No Implementation	291	40.8	253	34.6
Unknown	9	1.3	42	5.7
Total	714	100.0	732	100.0

Note: This year, collection box that is located in carpark distributes as "site collection" and the collection box that is located in front of a store distributes as "store collection".

Target Items for Site Collection Practiced by Municipalities (multiple answers)

Introducing the Promotion of Recycling of Small Waste Electrical and. Electronic Equipment ACT on April, 2013, the ration of collecting a small waste electrical and equipment in municipalities have increased over 30% since FY2011. However the number of municipalities where collect steel cans through site collection has decreased to 28.1%.

	FY2011		FY2014	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Newspaper	195	46.1	178	40.6
Waste paper	195	46.1	176	40.2
Cardboard	195	46.1	171	39.0
Fabric	136	32.2	147	33.6
Aluminum cans	152	35.9	128	29.2
Steel cans	146	34.5	123	28.1
Metals	45	10.6	50	11.4
Returnable bottles	119	28.1	108	24.7
PET bottles	220	52.0	174	39.7
Trays	146	34.5	109	24.9
Milk cartons	244	57.7	211	48.2
Small household appliances	52	12.3	213	48.6
Hazardous waste	190	44.9	166	37.9
Others	135	31.9	175	40.0
Unknown	12	2.8	5	1.1
Total	423	100.0	178	100.0

The Rate of Practicing Group Collection by Region

Site collection at public facilities is major in Kanto and Chubu. In Chubu region, setting boxes out at supermarket (11.6%), setting boxes out in vacant lots (6.3%), and setting boxes at voluntary places (15.2%) are major sites.

	Set out boxes at public facilities		Set out boxes at stores around carpark		Set out boxes at vacant lots and parks		Set out boxes at voluntary places		No Implementation	
	# of wards and cities	rate(%)	# of wards and cities	rate(%)	# of wards and cities	rate(%)	# of wards and cities	rate(%)	# of wards and cities	rate(%)
Hokkaido (33)	19	55.9	0	0.0	1	2.9	1	2.9	13	38.2
Tohoku (65)	29	41.4	2	2.9	2	2.9	8	11.4	31	44.3
Kanto (184)	123	64.7	4	2.1	3	1.6	28	14.7	56	29.5
Hokuriku (45)	22	48.9	1	2.2	4	8.9	8	17.8	19	42.2
Chubu (114)	77	68.8	13	11.6	7	6.3	17	15.2	18	16.1
Kinki (98)	47	48.5	6	6.2	4	4.1	12	12.4	41	42.3
Chugoku (52)	24	50.0	3	6.3	2	4.2	6	12.5	21	43.8
Shikoku (34)	19	61.3	1	3.2	3	9.7	3	9.7	8	25.8
Kyushu/Okinawa (99)	50	47.6	7	6.7	5	4.8	9	8.6	46	43.8

Note: inside ( ) indicates the number of municipalities in each district.

4. How Do Municipalities Participate in Store collection?

Few areas cooperate with municipalities and retailers for store collection, however most of retailers make an effort independently as a part of their corporate social responsibility.
Basically, the method of cooperation is PR and some municipalities provide recycling box and collect recyclable waste from store. To promote store collection, there are number of issues other than cost or space, the regulation of waste disposal is different with each municipalities.

Cooperation for store collection (multiple answers)

62.2% of the municipalities do not have relationship with retailers. 20% of the municipalities do collect PET bottles. Some municipalities do collect all items especially in rural area because of no private recycling facilities other than municipalities.

	FY2014	
	# of wards and cities	rate(%)
No Cooperation	455	62.2
Collecting recyclable waste from retailers	148	20.2
PR	118	16.1
Providing a recycling box	65	8.9
Set up a recognition system	65	8.9
Set up a forum for discussion with retailers	32	4.4
Set up a forum for discussion with public and retailers	22	3.0
Unknown	32	4.4
Total	732	100.0

The Rate of Municipalities Collection Resource Waste from Retailers (multiple answers)

Among items which are collected by the municipalities, 51.4% is PET bottles which is collected mainly in Kanto, Hokuriku, Chu-bu, Kinki area. Only 6.8% is Steel cans which are collected in Kinki, Chu-goku, Shikoku area.

	FY2014	
	# of wards and cities	rate(%)
Newspaper	6	4.1
Waste paper	6	4.1
Cardboard	6	4.1
Fabric	8	5.4
Aluminum cans	11	7.4
Steel cans	10	6.8
Metals	3	2.0
Returnable bottles	9	6.1
PET bottles	76	51.4
Trays	31	20.9
Milk cartons	34	23.0
Small household appliances	30	20.3
Hazardous waste	33	22.3
Others	29	19.6
Unknown	4	2.7
Total	148	100.0

Understanding of collection amount (multiple answers)

In case retailers manage store collection itself, only 8.9% of municipalities get report from retailers and other 46.3% of municipalities do not know what items they collect or how much they collect.

	FY2014	
	# of wards and cities	rate(%)
Known only undertaken amount	113	44.0
Informed by a retailer	23	8.9
No Grasp	119	46.3
Unknown	6	2.3
Total	257	100.0

Issues of store collection

Store collection is able to complement the function of municipal collection however most of store collection is conducted by store operator itself so that there is lack of partnership between municipalities and store operator.

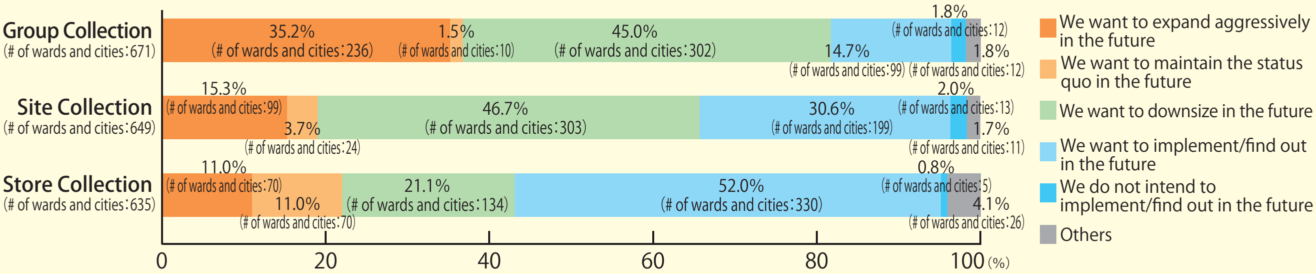
	FY2014	
	# of wards and cities	rate(%)
Uncertain perspective under the waste management law	93	12.7
Bad consumer separation behavior	80	10.9
Lack of partnership with store operator	168	23.0
No obvious problem	218	29.8
Others	27	3.7
Unknown	229	31.3
Total	732	100.0

The Reality of Private Collection of Steel Cans -Future Prospects-

As a recycling route of resources other than Municipalities Collection, there are collection methods such as Group Collection, Site Collection, and Store Collection. In the future, the effectiveness of recycling could be enhanced by practicing Municipalities Collection and Group Collection in parallel, and at the same time implementing multiple route of collecting resources such as Store Collection and Site Collection based on locality such as areas with many elderly people or residential area that is concentrated in a relatively small area. To promote these Private Collection activities, the support and the cooperation from the local government is necessary, so a research was done to investigate what the local governments think of the resource collecting route and its future intentions and the reasons for them.

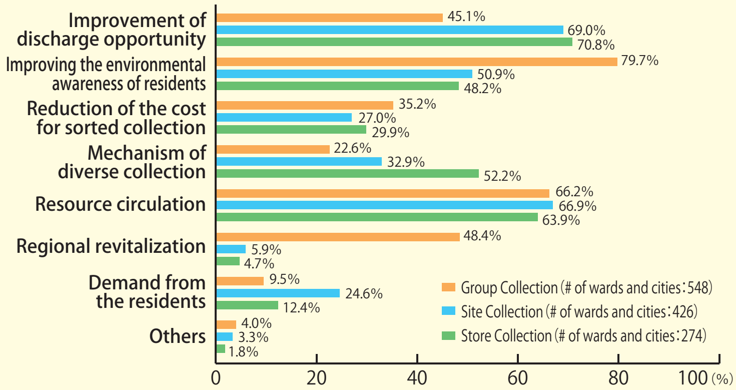
(1) Future Intentions

Recently, some local governments have stopped Municipalities Collection for used papers and shifted towards Group Collection, while others have implemented Group Collection and Site Collection in parallel with Municipalities Collection for collecting hazardous materials like batteries and small household appliances at a hub. However, according to the results of the survey, the most common answer was "we will continue to maintain the status quo" for Group Collection and Site Collection, and "we do not intend to implement/find out in the future" for the Store Collection.



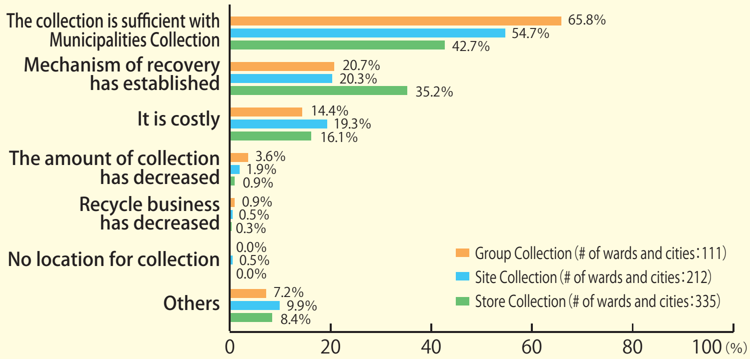
(2) The Reasons of Promoting Private Collection Route (multiple answers)

Local governments who indicated a positive intention in promoting private collection routes by answering "We want to expand aggressively in the future" or "We want to implement/find out in the future" promoted the private collection routes, and indicated the improvement of discharge opportunity, residents improvement of environmental awareness, and resource recycling (recycling rate) as their reason. Many gave regional revitalization as the purpose of promoting Group Collection as their purpose as well.



(3) The Reasons for the downsize/non-implementation or not finding out (multiple answers)

Even though the Store Collection is a recycling system that fits the lifestyle of residents since a supermarket is a place they routinely visit and appears to benefit the local government by complementing the sorted collection, more than half of the responses from the local governments answered "We do not intend to implement/find out in the future" since "The collection is sufficient with Municipalities Collection" in regards to the future intention of Store Collection.



Data 1

The Method for Calculating the Steel Can Recycling Rate

Following is the method for calculating the steel can recycling rate.

Amount of Steel Can Consumption

Calculation Method

The weight of domestically produced steel cans shipped, weight of steel cans used for import/export of canned food and weight of steel cans imported as empty cans between January and December of 2014 were monitored based on the Ministry of Economy, Trade and Industry Statistics and "Japan Exports and Imports" from the Ministry of Finance, as well as the surveyed weight of steel cans.

Calculation Results (① − ② + ③ + ④): 571,157 ton

①Weight of domestically produced steel cans shipped : 457,712 tons

- Figures in tons from the Ministry of Economy, Trade and Industry Statistics were used for Beverage cans, food cans and general cans.
- The weight of 18-liter cans is calculated by multiplying figures in tons from the Ministry of Economy, Trade and Industry Statistics by the (food) ratio announced by the National Federation of 18 Liter Cans Manufacturers Corporative Union.

②The weight of steel cans used for exporting canned food : 1,375 tons

- Calculated based on "Japan Exports and Imports " from the Ministry of Finance.

③The weight of steel cans used for importing canned food : 107,509 tons

- Calculated based on "Japan Exports and Imports" from the Ministry of Finance. We assumed that the main types of cans used for manufacturing in Japan were used for food, tomatoes/vegetables and pet foods imported in "air-tight containers" (including not only cans but also other containers), and we estimated the number of cans and calculated the weight of containers by multiplying by the unit can weight.
- Exported pet food cans: 17,874 tons (*Calculated based on the data from the Pet Food Manufacturers Association, Japan)

④Weight of steel cans imported as empty cans : 7,311 tons

- Figures in tons from "Japan Exports and Imports" from the Ministry of Finance.

Amount of steel can scrap collection

Calculation Method

- We assumed that 3 months elapses between the sale of steel can goods and the collection of the cans for recycling and we sent a survey form regarding usage amounts of scrap steel cans during the period from April 2014 to March 2015 to a total of 77 manufacturers including furnace manufacturers, blast furnace manufacturers, Pellet manufacturers, and casting manufacturers.
- In addition, we estimated, according to the survey data, the amount of steel cans for steelmaking raw materials recycled under the standard other than C Shredder through shredding process of iron scrap dealers across the country, and incorporated it into the subject calculation.
- We subtracted the weight of aluminum caps for beverage cans included in the scrap steel cans and foreign substances such as iron scraps except steel can from this total value.

Calculation Results (① − ② − ③) : 525,470 ton

①Weight of scrap steel cans used : 553,280 tons
②Weigh of foreign substances such as aerosol cans, iron scrap included in ① above : 3,202 tons
③Weight of aluminum lids for beverage containers included in ① above : 24,608 tons

The Steel Can Recycling Rate in FY2014

$$\frac{\text{Amount of steel can scrap collection (525,470 tons)}}{\text{Amount of Steel Can Consumption (571,157 tons)}} = 92.0\%$$

Data 2

Distribution Diagram of Steel Makers (Electric Furnace & Blast Furnace) and Pellet

* The research conducted by
Japan Steel Can Recycling Association
(As of July 2015)

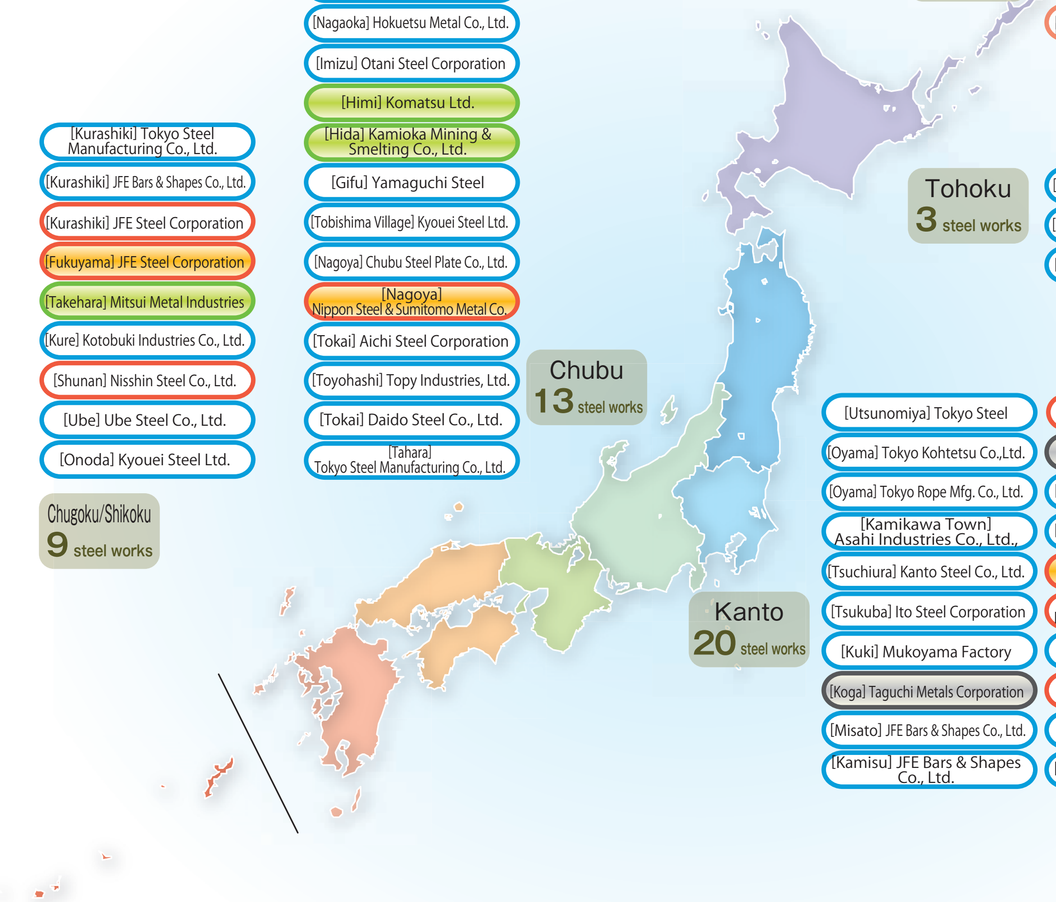
Total in Japan **77** Steel Works

- Blast furnace steel works ··· 15
- Electric furnace steel works ··· 52
- Casting works, etc. ··· 6
- Pellet works ········· 4
- Manufacturing plant of sheet steel from cans ····· 6

■Steel cans are recycled in most of these steel works and foundries.

■Recycled products are produced in nearest plant in each region to recycle efficiently.

At 6 works (included number of 77 works), steel sheets for cans are produced to make steel cans.



Hokkaido 3 steel works

- [Sapporo] JFE Bars & Shapes Co., Ltd.
- [Tomakomai] Shimizu Steel Co.,Ltd.
- [Muroran] Nippon Steel & Sumitomo Metal Co.

Tohoku 3 steel works

- [Hachinohe] Tokyotekko. Co., Ltd.
- [Ishinomaki] Ito Steel Corporation
- [Sendai] JFE Bars & Shapes Co., Ltd.

Chubu 13 steel works

- [Tsubame] Mitsuboshi Metal Industries, Ltd.
- [Nagaoka] Hokuetsu Metal Co., Ltd.
- [Imizu] Otani Steel Corporation
- [Himi] Komatsu Ltd.
- [Hida] Kamioka Mining & Smelting Co., Ltd.
- [Gifu] Yamaguchi Steel
- [Tobishima Village] Kyouei Steel Ltd.
- [Nagoya] Chubu Steel Plate Co., Ltd.
- [Nagoya] Nippon Steel & Sumitomo Metal Co.
- [Tokai] Aichi Steel Corporation
- [Toyohashi] Topy Industries, Ltd.
- [Tokai] Daido Steel Co., Ltd.
- [Tahara] Tokyo Steel Manufacturing Co., Ltd.

Chugoku/Shikoku 9 steel works

- [Kurashiki] Tokyo Steel Manufacturing Co., Ltd.
- [Kurashiki] JFE Bars & Shapes Co., Ltd.
- [Kurashiki] JFE Steel Corporation
- [Fukuyama] JFE Steel Corporation
- [Takehara] Mitsui Metal Industries
- [Kure] Kotobuki Industries Co., Ltd.
- [Shunan] Nisshin Steel Co., Ltd.
- [Ube] Ube Steel Co., Ltd.
- [Onoda] Kyouei Steel Ltd.

Kanto 20 steel works

- [Utsunomiya] Tokyo Steel
- [Oyama] Tokyo Kohtetsu Co.,Ltd.
- [Oyama] Tokyo Rope Mfg. Co., Ltd.
- [Kamikawa Town] Asahi Industries Co., Ltd.
- [Tsuchiura] Kanto Steel Co., Ltd.
- [Tsukuba] Ito Steel Corporation
- [Kuki] Mukoyama Factory
- [Koga] Taguchi Metals Corporation
- [Misato] JFE Bars & Shapes Co., Ltd.
- [Kamisu] JFE Bars & Shapes Co., Ltd.
- [Kashima] Nippon Steel & Sumitomo Metal
- [Saitama] Japan Beverage Ecology Inc.
- [Kawaguchi] Jyonan Seikosho
- [Funabashi] Goudou Steel Ltd.
- [Chiba] JFE Steel Corporation
- [Kimitsu] Nippon Steel & Sumitomo Metal Co.
- [Adachi-ward] Chiyoda-Steel Co., Ltd.
- [Kawasaki] JFE Steel Corporation
- [Kawasaki] Nippon Yakin Kogyo Co., Ltd.
- [Hiratsuka] Sanko Seiko Co., Ltd.

Okinawa 1 steel works

- [Onoda] Kyouei Steel Ltd.

Kyushu 7 steel works

- [Kitakyushu (Yahata)] Nippon Steel & Sumitomo Metal Co.
- [Kitakyushu] Tokai Co.,Ltd.
- [Kitakyushu] Tokyo Steel Manufacturing Co., Ltd.
- [Kitakyushu] Kitakyushu Akikan Recycle Station Co., Ltd.
- [Takeo] Kyushu Steel Co.
- [Uto] Osaka Steel Co., Ltd.
- [Oita] Nippon Steel & Sumitomo Metal Co.

Kinki 21 steel works

- [Nagaokakyo] Daigo Inc.
- [Hirakata] Kyouei Steel Ltd.
- [Hirakata] Kubota, Ltd.
- [Osaka] Kurimoto, Ltd.
- [Osaka] Kyouei Steel Ltd.
- [Osaka] Osaka Steel Co.,Ltd.
- [Osaka] Nakayama Steel. Works ,Ltd.
- [Sakai] Shinkansai Steel Corporation
- [Sakai] Osaka Steel Co.,Ltd.
- [Sakai] Kurimoto, Ltd.
- [Kisiwada] Kishiwada Steel Co., Ltd.
- [Wakayama] Nippon Steel & Sumikin Shapes Corporation
- [Wakayama] Nippon Steel & Sumikin Coated Sheet Corporation
- [Kobe] Kobe Steel Ltd.
- [Kakogawa] Kobe Steel Ltd.
- [Takasago] Kobe Steel Ltd.
- [Himeji] Nippon Steel & Sumitomo Metal Co.
- [Himeji] Yamato Kogyo Co., Ltd.
- [Himeji] JFE Bars & Shapes Co., Ltd.
- [Himeji] Goudou Steel Ltd.
- [Himeji] Sanyo Special Steel co., Ltd.

Data 3

Activities of the Japan Steel Can Recycling Association
(October 2014～September 2015)

■ Research

・April – September, 2015: Survey of steel can recycling conditions

■ Exhibited at events on environments in nationwide. Performed promotion and PR for beautification and 3Rs.

・October 2014: "Community Communication Day in Yamaguchi"
・October 2014: JFE Chiba Festival in Chiba.
・October 2014: "Environment Festival for Children in Chuo-ku, Tokyo"
・November 2014: "JFE West Japan Fair in Kurashiki"
・November 2014: "Yahata Festival Kigyosai in Fukuoka"
・November 2014: "Tokai Autumn Festival 2014 in Aichi"
・December 2014: "Eco-Products 2014 in Tokyo"
・May 2015: "JFE West Japan Fair in Fukuyama"
・June 2015: "Eco-Life Fair 2015"
・August 2015: "Eco-Products 2015 in Kawagoe"
・September 2015: "CAN ART Festival in Otaru"

Eco-Products 2014

■ Practiced "Campaigns for Anti-Littering and Beautification"

・November 2014 in Susono, May 2015 in Kushiro, June 2015 in Kitakyushu
・Performed 496 times at 355 sites in total 43 years from 1973 till September 2015

Practiced "Campaigns for Anti-Littering and Beautification" in Kushiro

■ Performed "Excursion at Steel Plants"

・August 2015: Keio Girls senior High School visited "JFE Steel Corporation East Japan Works"
・August 2015: Pupils living in Chuo-ku visited "Nippon Steel & Sumitomo Metal Corporation Kimitsu Works"

■ Supported elementary and junior high schools for practicing environmental education

・January 2015: Commended and Supported 49 elementary & junior high schools

■ Supported groups practicing group collection

・February 2015: Commended and Supported 69 groups performing group collection of steel can

■ Held "Poster Contest on Steel Cans Recycling"

・January 2015: Commended 47 school children

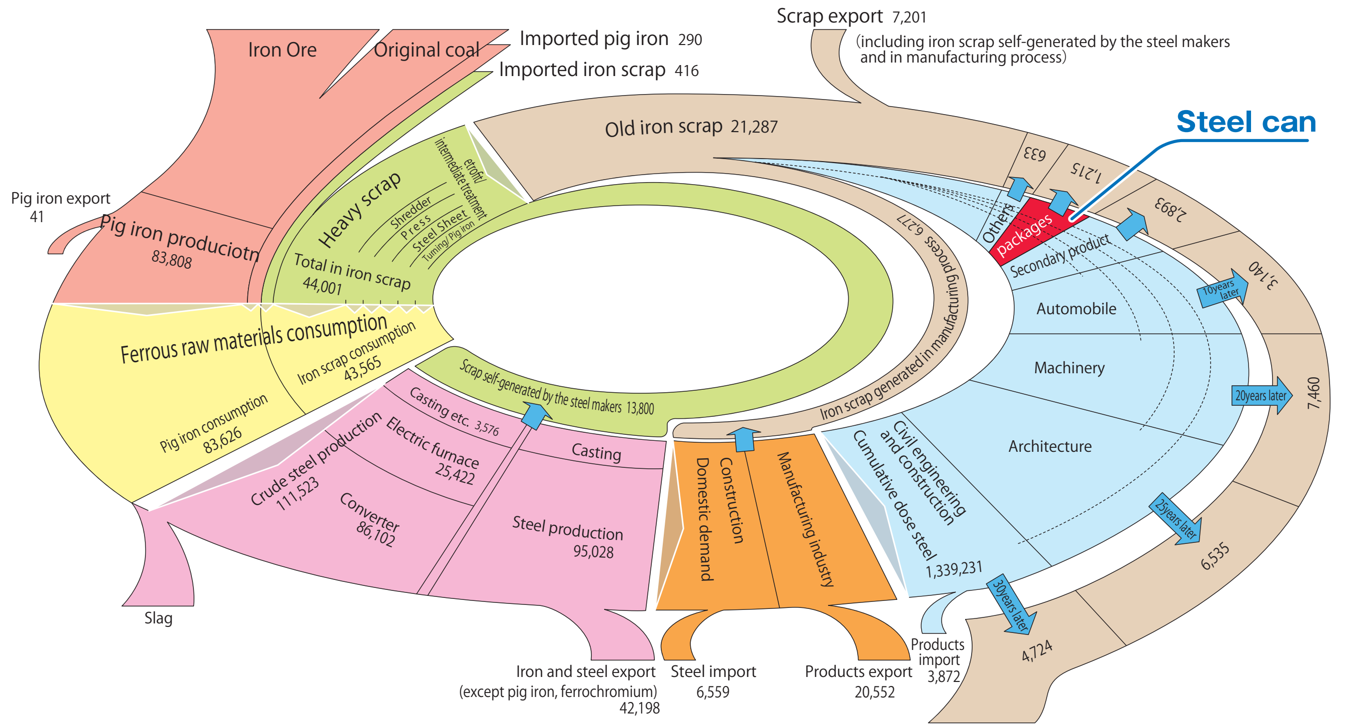
■ Published periodicals etc. and distributed to nationwide

・February 2015: PR magazine "Steel Can Age vol.33"
・August 2015: PR magazine "Steel Can Age vol.34"
・August 2015: PR poster "Steel cans are "infinite recycling" Re-born and being active throughout the country!"

■ Others

・October 2014: Published "Annual Report on Steel Can Recycling 2014"
・October 2014: Held "Press briefing" at Tekko Kaikan
・Practiced delivery sessions, lectures and invited for lecture (on demand)
・Practiced join projects to promote 3Rs of recycling containers and packaging by the Liaison Committee of Associations Promoting 3Rs

Japanese Steel Circulation Figure (FY2013) Unit:1,000t



* 1 Cumulative dose steel as of March 2014
* 2 Iron and steel import and export are from"Cumulative Dose Steel in FY2013(estimated)" Figure4, quarterly Tetsugen, vol. 63.
* 3 The amount of collected old iron scrap is from "Annual Report on Ferrous Raw Materials No.26 (2015)." vol.V-3.
* 4 Supply and Demand of pig iron/iron scrap are from "Annual Report on Ferrous Raw Materials No.26 (2015)." vol.II-1-Figure 2.
* 5 Iron ore and original coal have no data due to the abolition of statistics by the Ministry of Economy, Trade and Industry.

Data from the Japan Ferrous Raw Materials Association

Steel cans are excellent in recycling that regenerate many iron and steel products

Summary of Japan Steel Can Recycling Association

Purpose of Foundation

We are a private organization that pursues social contributions through researches about litter prevention measures by used steel cans and steel cans recycle. We mainly conduct recycling measures, beautification, litter prevention measures, and promotional activities.

Foundation

April 17, 1973

Representatives

Chairman ··············· Shinya Higuchi (Representative Director and Executive Vice-President, Nippon Steel & Sumitomo Metal Corporation)
Vice-Chairman········· Yasuji Mori (Executive Managing Director, Manager of Main Production, Environment, Quality Assurance Unit, Toyo Seikan Kaisha, Ltd.)
Vice-Chairman········· Isamu Yamaguchi (Representative Director and Executive Vice-President, Daiwa Can Company)
Executive Director ··· Ryohei Nakata

Member corporations (12 companies)

Steel makers··········· Nippon Steel & Sumitomo Metal Corporation, JFE Steel Corporation, Toyo Kohan Co., Ltd.
Can manufacturers··· Toyo Seikan Kaisha, Ltd., Daiwa Can Company, Hokkai Can., Ltd.
Distributors ··········· Mitsui & Co. Steel Ltd., Marubeni-Itochu Steel Inc., Metal One Corporation, JFE Shoji Trade Corporation, Nippon Steel & Sumikin Bussan Corporation, Tokan Trading Corporation

Annual Report on Steel Can Recycling 2015

Issue : October 2015

Japan Steel Can Recycling Association

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Steel cans can be recycled forever, and are the most eco-friendly container.

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