

Importance of proper waste disposal and information management

October 18, 2016

Japan Industrial Waste Information Center
Information Processing Center



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1

Manifest information

Waste subject to the manifest system

- The manifest system in Japan controls the industrial waste flow by electronic manifest or paper manifest, subject to which are “industrial waste commissioned from waste generators to collectors/transporters or disposal operators”.

Manifest system

Electronic manifest



Paper manifest



Waste subject to the manifest system

Waste		General waste	Industrial waste
Disposal type	Self disposal	Not subject	Not subject
	Commissioned disposal	Not subject	Subject

Cases and volume of applied manifest

- Based on number of cases applying manifest information

It is estimated that manifest information is applied in approximately 50 million cases per year through paper manifest and electronic manifest.

- Based on volume of commissioned waste

The volume of commissioned industrial waste subject to the manifest system is estimated to be 95-110 million tons per year (25-30% of industrial waste generation).

Number of manifest cases

Cases of electronic manifest information

+

Cases of paper manifest information

Approximately 50 million cases

Commissioned waste

Approximately 380 million tons of industrial waste (FY2013)

95-110 million tons of industrial waste commissioned

2

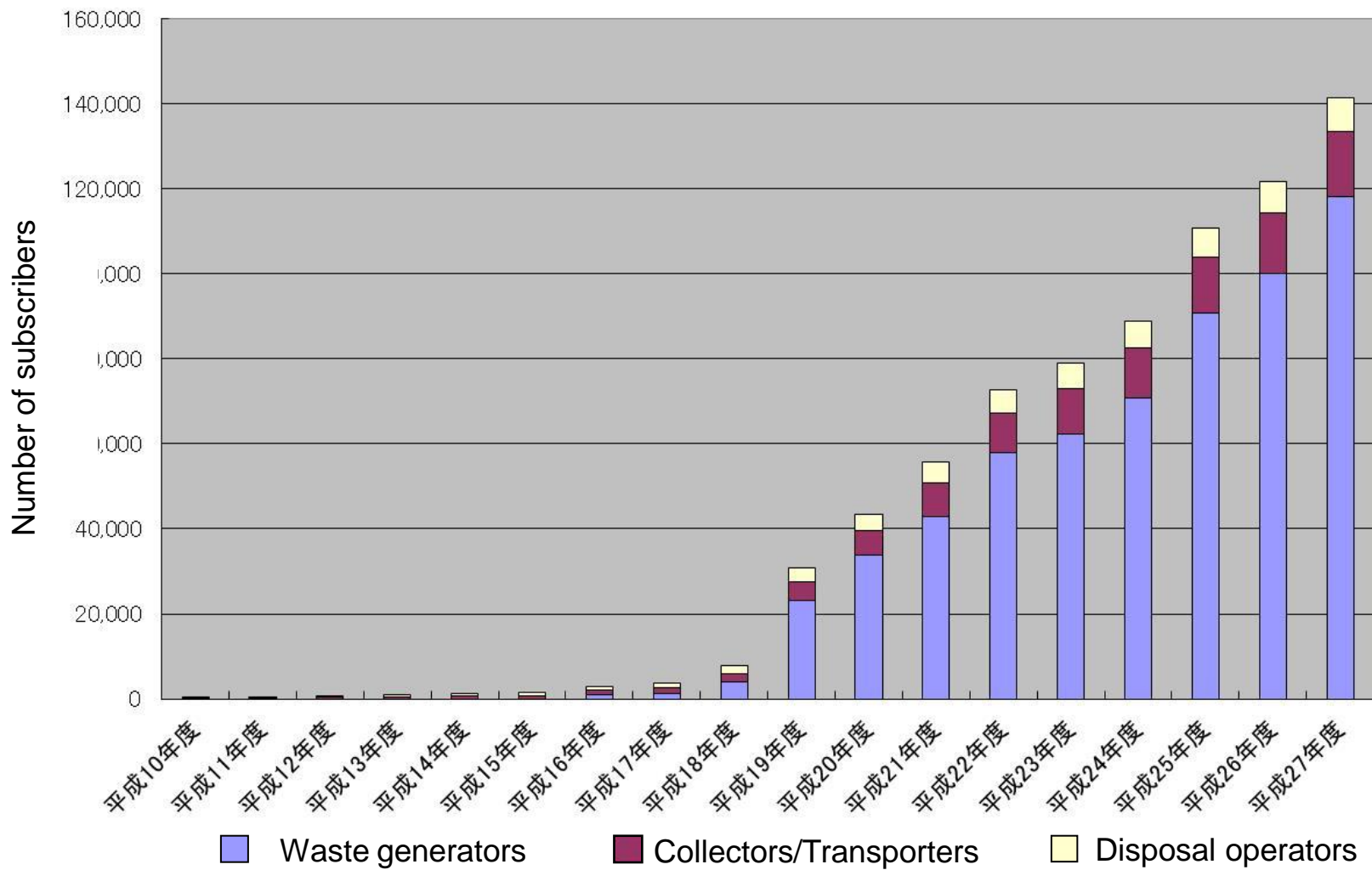
Current application status of electronic manifest and diffusion target

Transition of numbers of subscribers and registrations by fiscal year

FY	Item	Number of subscribers			Number of manifest registrations ※	Electronization rate	
		Total	Generators	Collectors/transporters			Disposers
1998		502	143	178	181	8,041	0.0%
1999		627	170	240	217	77,181	0.2%
2000		759	189	300	270	97,470	0.2%
2001		1,086	222	462	402	146,502	0.3%
2002		1,519	328	619	572	408,037	0.8%
2003		2,001	487	785	729	812,140	1.6%
2004		2,978	1,019	1,009	950	1,137,785	2.3%
2005		3,834	1,291	1,327	1,216	1,621,975	3.2%
2006		7,784	4,083	1,921	1,780	2,388,069	4.8%
2007		30,705	23,164	4,300	3,241	4,076,448	8.2%
2008		43,493	33,718	5,775	4,000	6,415,296	12.8%
2009		55,797	43,009	7,891	4,897	8,390,114	16.8%
2010		72,761	57,837	9,388	5,536	10,614,066	21.2%
2011		79,155	62,443	10,673	6,039	12,882,074	25.8%
2012		89,015	70,792	11,720	6,503	15,056,116	30.1%
2013		110,860	90,857	13,005	6,998	17,460,912	34.9%
2014		121,745	100,137	14,210	7,398	19,293,458	38.6%
2015		141,441	118,069	15,543	7,829	21,247,609	42.5%

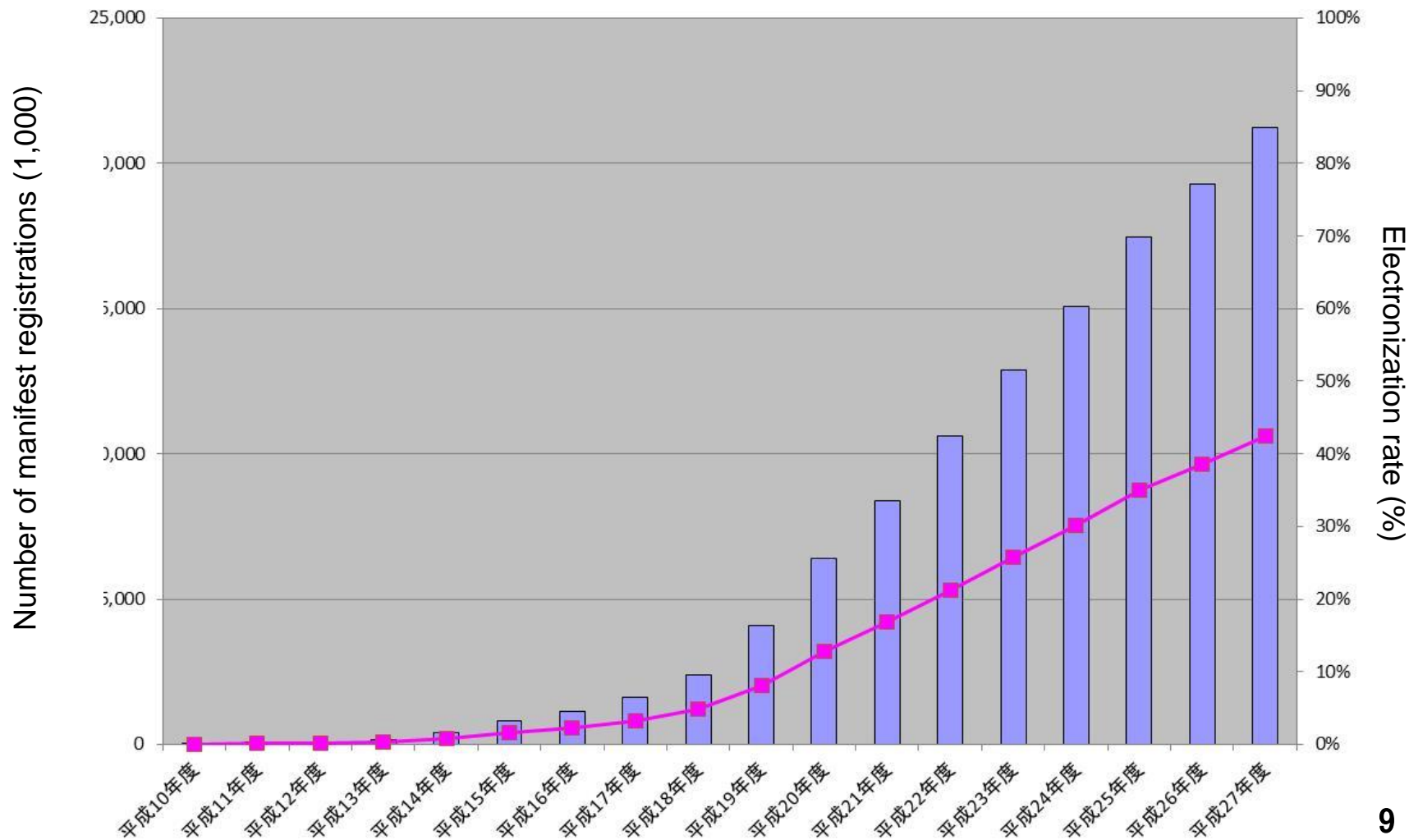
Electronic manifest needs to be practiced among waste generators, transporters and disposal operators.

Transition of number of subscribers by fiscal year (FY1998-2015)



Transition of number of registrations and electronization rate (FY1998-2015)

Number of manifest registrations (1,000)

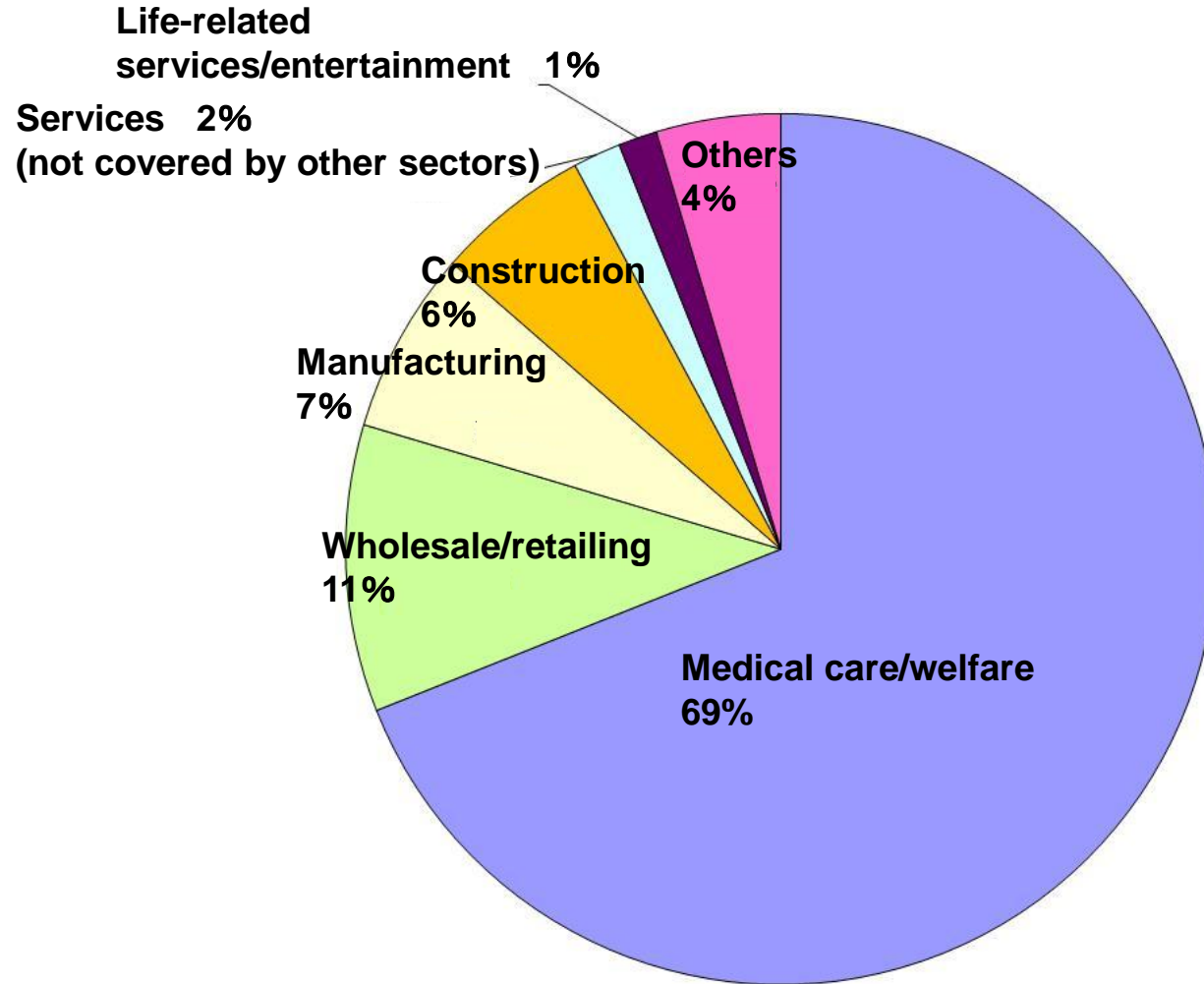


Number of subscribing waste generators by sector (as of March 31, 2016)

Sector	Number of subscribers	Percentage	Sector	Number of subscribers	Percentage
Medical care/welfare	81423	69.0%	Transportation/postal services	497	0.4%
Wholesale/retailing	12576	10.7%	Telecommunications	358	0.3%
Manufacturing	8016	6.8%	Public services (not covered by other sectors)	218	0.2%
Construction	6798	5.8%	Education/learning support	191	0.2%
Services (not covered by other sectors)	2103	1.8%	Agriculture/forestry	184	0.2%
Research/specialty/technical services	1889	1.6%	Multi-services	106	0.1%
Life-related services/entertainment	1700	1.4%	Financing/insurance	92	0.1%
Real estate/rental and leasing	727	0.6%	Mining/quarrying/gravel digging	15	0.0%
Accommodations/food and beverage	638	0.5%	Fisheries	4	0.0%
Electricity/gas/energy/water	534	0.5%	Total	118069	100%

Breakdown of subscribing waste generators by sector

(as of March 31, 2016)

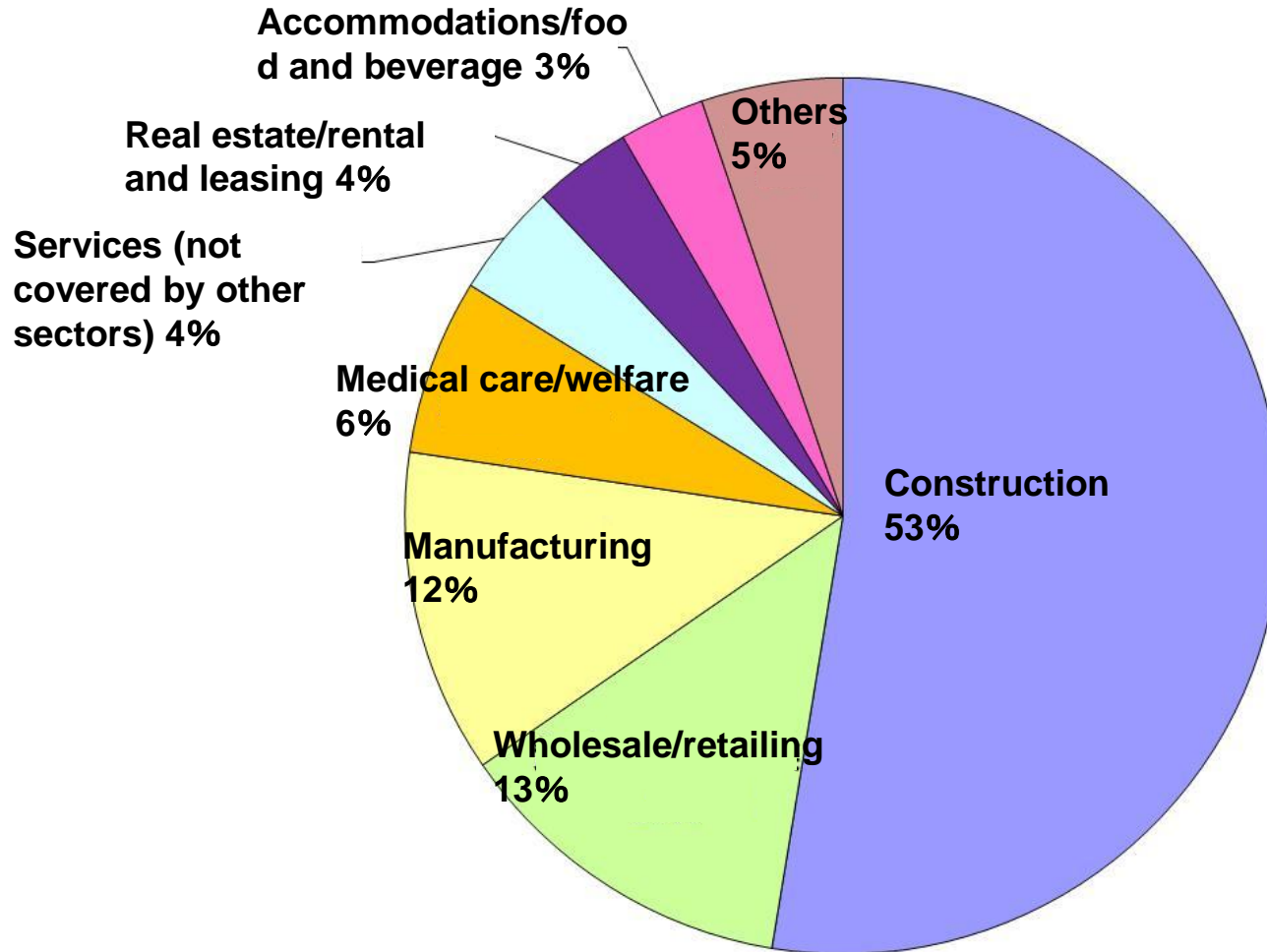


Number of registrations by sector (Registrations from April 2015 to March 2016)

Sector	Number of subscribers	Percentage	Sector	Number of subscribers	Percentage
Construction	11,175,600	52.6%	Telecommunications	105,187	0.5%
Wholesale/retailing	2,715,852	12.8%	Life-related services/entertainment	85,055	0.4%
Manufacturing	2,540,489	12.0%	Financing/insurance	62,858	0.3%
Medical care/welfare	1,378,410	6.5%	Research/specialty/technical services	53,485	0.3%
Services (not covered by other sectors)	884,350	4.2%	Multi-services	23,285	0.1%
Accommodations/food and beverage	669,901	3.2%	Education/learning support	29,301	0.1%
Real estate/rental and leasing	773,096	3.6%	Agriculture/forestry	16,561	0.1%
Transportation/postal services	311,880	1.5%	Mining/quarrying/gravel digging	5,789	0.0%
Transportation/postal services	233,275	1.1%	Fisheries	245	0.0%
Electricity/gas/energy/water	182,990	0.9%	Total	21247609	100%

Breakdown of registrations by sector

(Registrations from April 2015 to March 2016)



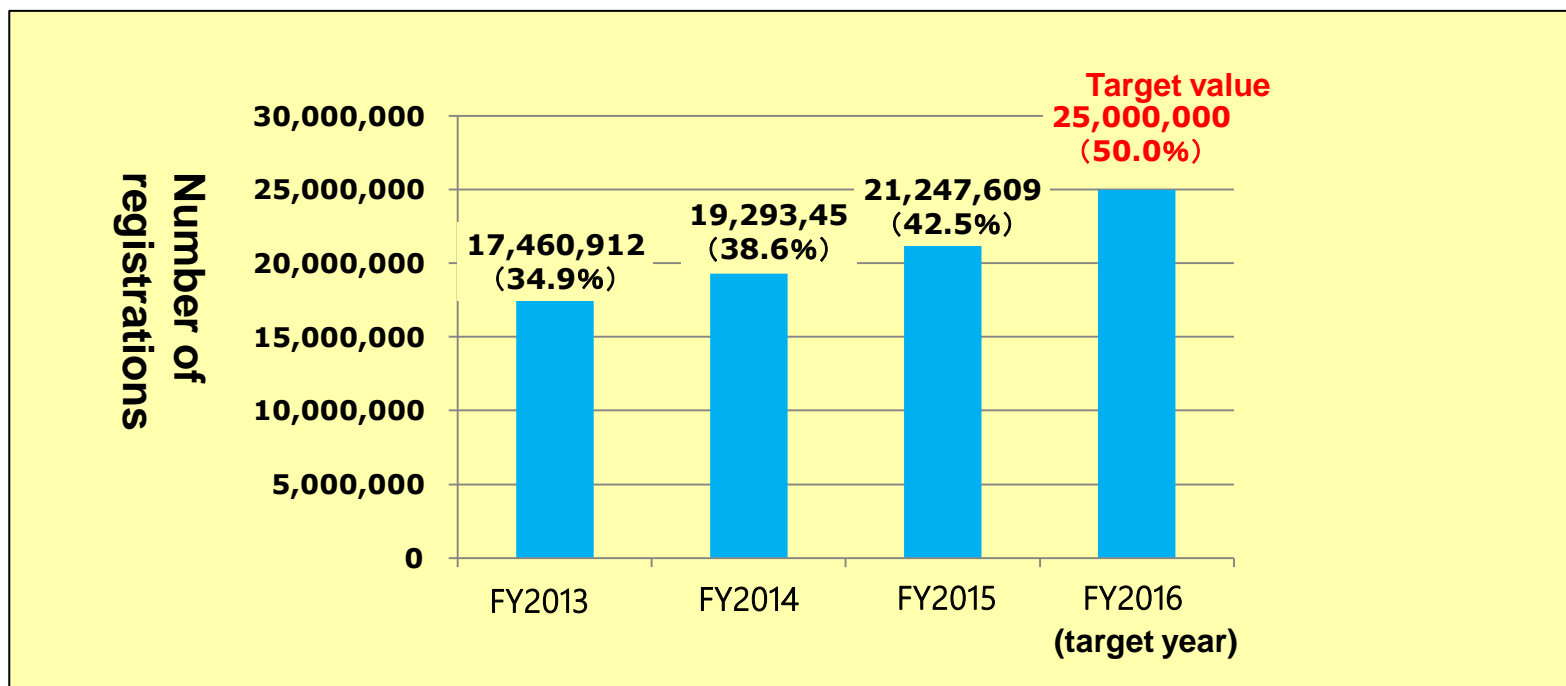
Diffusion target and current status of electronic manifest

- **Diffusion target of electronic manifest**

The diffusion target of electronic manifest in the Fundamental Plan for Establishing a Sound Material-Cycle Society III (May 2013): **“diffusion rate (utilization rate) 50% in FY2016”**

- **Measures to achieve the diffusion target**

Active measures including briefing sessions for incorporating electronic manifest and promotion campaigns based on “Roadmap to Promote Electronic Manifest” (October 2013) developed by the Ministry of the Environment



3

Application of electronic manifest information in prefectures and designated cities

Structure of the electronic manifest system (JWNET)

Registration/report system

Administrative report system

Administrative information system

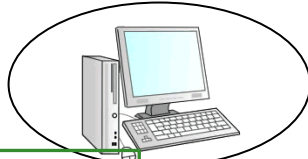
Target users

Waste generators



Collectors/transporters

Disposers

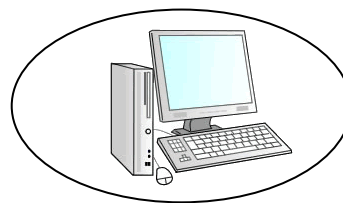


Outline of functions

- Manifest registration
- Report of completion of transportation and disposal
- Reference, revision and cancellation of manifest information

Target users

Waste generators

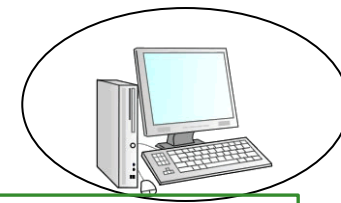


Outline of functions

- Confirmation, browsing and downloading of administrative report
- Setting of weight conversion coefficient

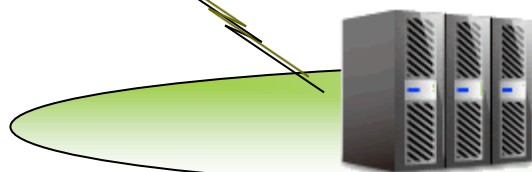
Target users

Prefectures and designated cities

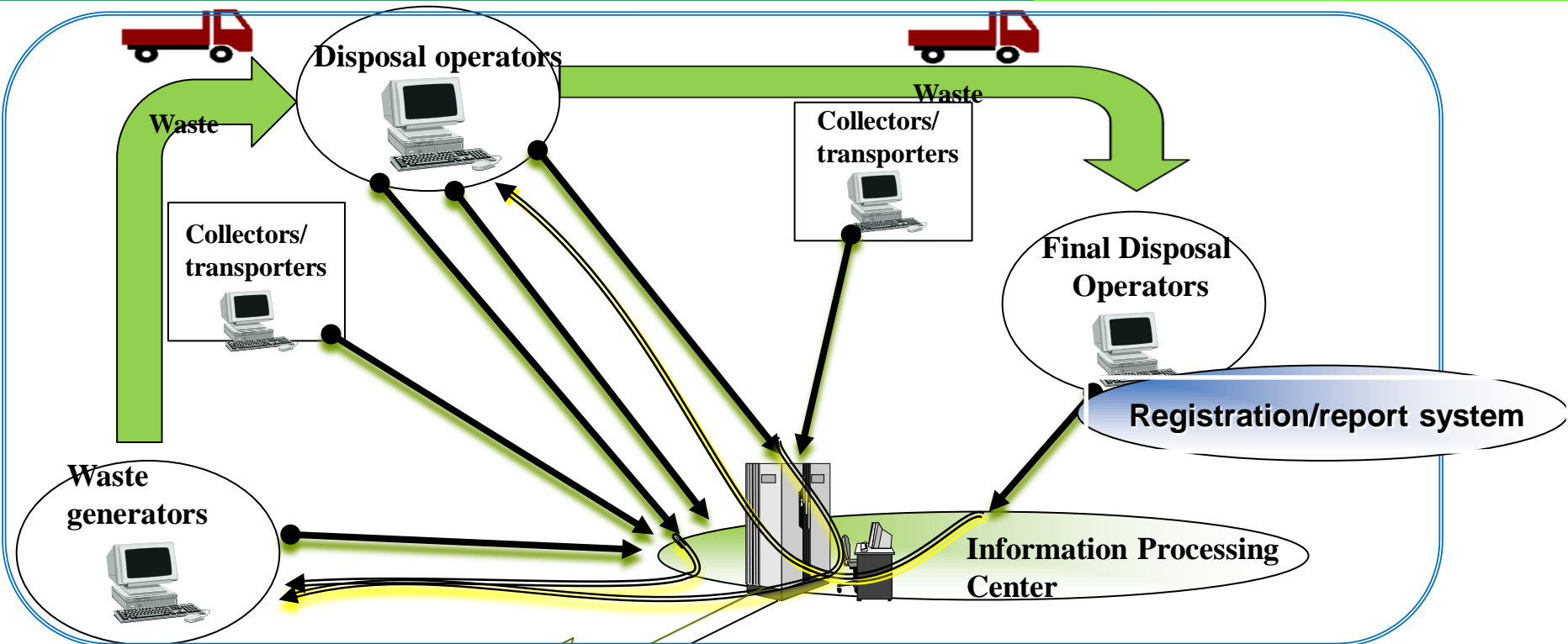


Outline of functions

- Reference and downloading of administrative report and manifest information
- Reference of information of subscribers
- Downloading of statistical information



Information Processing Center



Administrative information system

Prefectures and ordinance-designated cities are entitled to request the Information Processing Center to provide manifest information within the scope of the Waste Management and Public Cleaning Act

- Prefectures and ordinance-designated cities are entitled to disclose the status of registration and reporting to waste generators and treatment operators.
- Statistic information can also be downloaded



Duties on industrial waste in prefectures and ordinance-designated cities

Duties on industrial waste in prefectures and ordinance-designated cities are roughly divided into 1) Monitoring and guidance and 2) Planning and coordination.

1) Monitoring and guidance

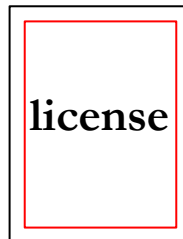
Monitoring, guidance and patrol against illegal dumping



Restoring measures against illegal dumping



Permits for disposal operators



Guidance and administrative dispositions



2. Planning and coordination

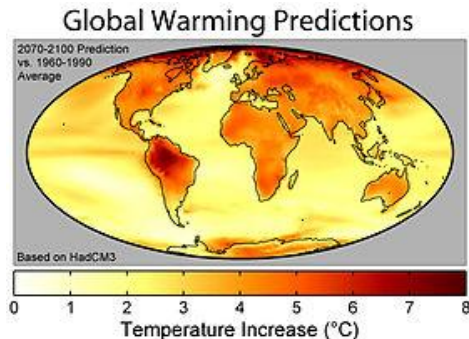
Planning and coordination of waste measures



Development of waste disposal plan



Measures to prevent global warming



Integrated promotion of 3R



Cases of applying electronic manifest information are introduced by sector on the following sheets.

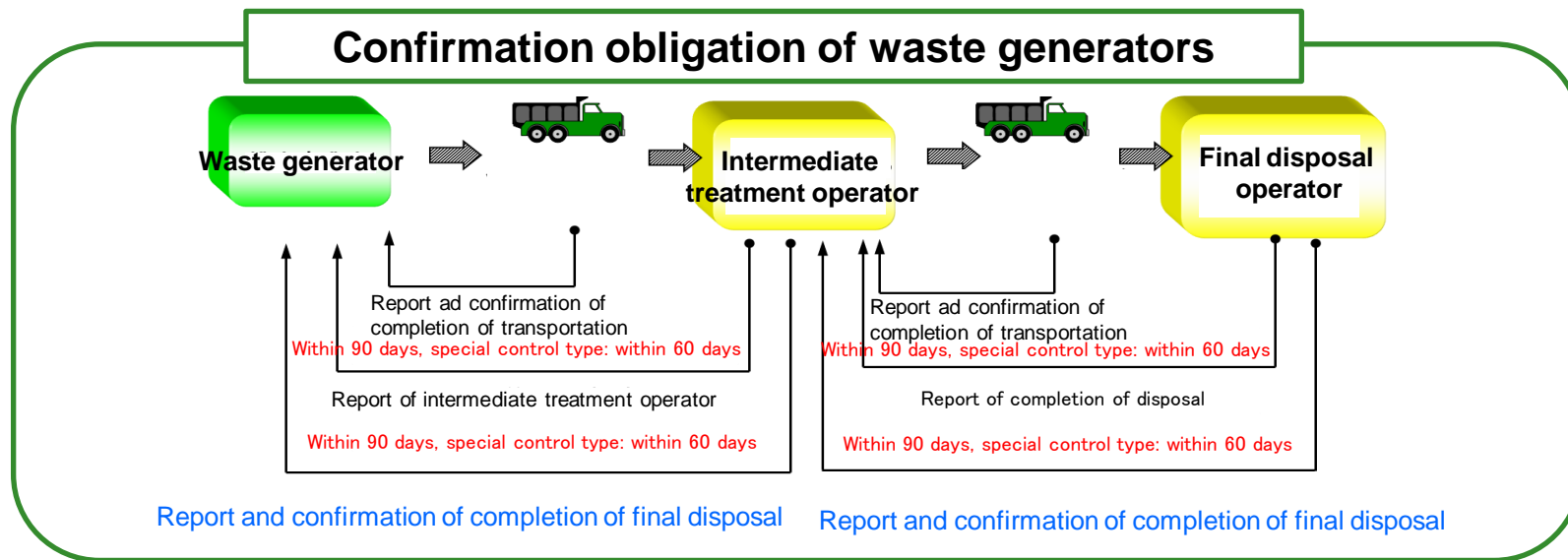
Application in monitoring and guidance ①

Function to notify manifest practiced inappropriately to the person in charge at prefectures or ordinance-designated city automatically by e-mail

- 1) It is the function to detect manifest which is not practiced properly by any of waste generators, transporters or disposal operators by the designated deadline.
- 2) It is the function to detect that waste generators haven't confirmed the manifest practiced inappropriately by the transporters or disposal operators by the designated deadline.

【Sample of application】

It can be applied to immediately detect manifest practiced inappropriately, in order to strengthen monitoring and guidance on proper waste treatment.



Application in monitoring and guidance ②

Reference of manifest information (functions of reporting and collecting)

- Prefectures and ordinance-designated cities are entitled to use the electronic manifest system to disclose the status of registration and reporting to waste generators and treatment operators on line.
- Concerning the scope of inquiry, it is allowed to request nation-wide manifest information (for the past five years) saved and managed by the Information Processing.

【Samples of application】

- Comparing with permits
During monitoring and guidance, it is possible to confirm whether waste is properly treated as permitted by the prefecture or the ordinance-designated city.
- Reference of on-the-spot inspections
It is possible to confirm during on-the-spot inspections whether the actual waste treatment is consistent with the relevant manifest information.
- Investigation of the cause of inappropriate treatments such as illegal dumping
While the information of evidence might be discarded in case of paper manifest, electronic manifest information saved and managed by the Information Processing Center cannot be revised, changed or discarded once certain conditions are satisfied such as 180 days passed after registration which makes it difficult to falsify and thus highly transparent.

Application in planning and coordination ①

Download of wide-area transportation volume of industrial waste

It is possible to aggregate and download the volume and flow of industrial waste from electronic manifest by area and waste type (from annual report and monthly report).

Flow of waste that can be aggregated (transportation)

Types of aggregation



【Samples of application】

- It is possible to comprehend the volumes of intermediate treatment and final disposal (volumes of recycling and reclamation).
- Clarifying the disposal method makes it possible to comprehend quickly the volumes of waste and recycling by sector.

Volume of wide-area transportation of industrial waste among prefectures (registered in the electronic manifest in FY2015)

Flow of waste from generation⇒intermediate treatment (matrix of origination and destination)

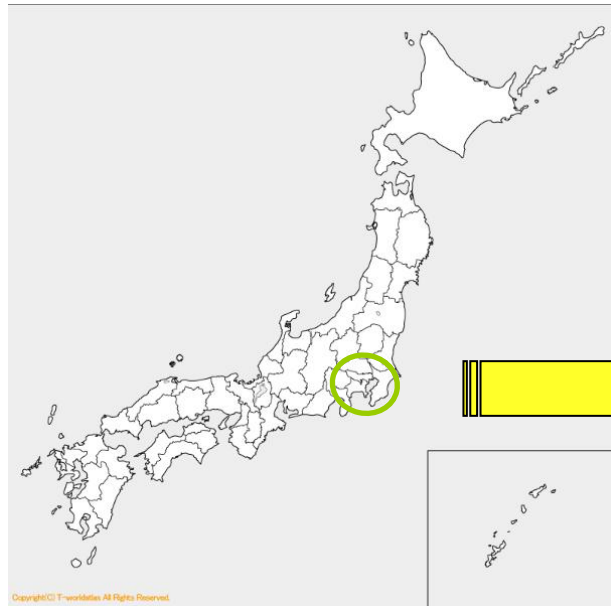
Prefecture of departure ↓

Prefecture of arrival

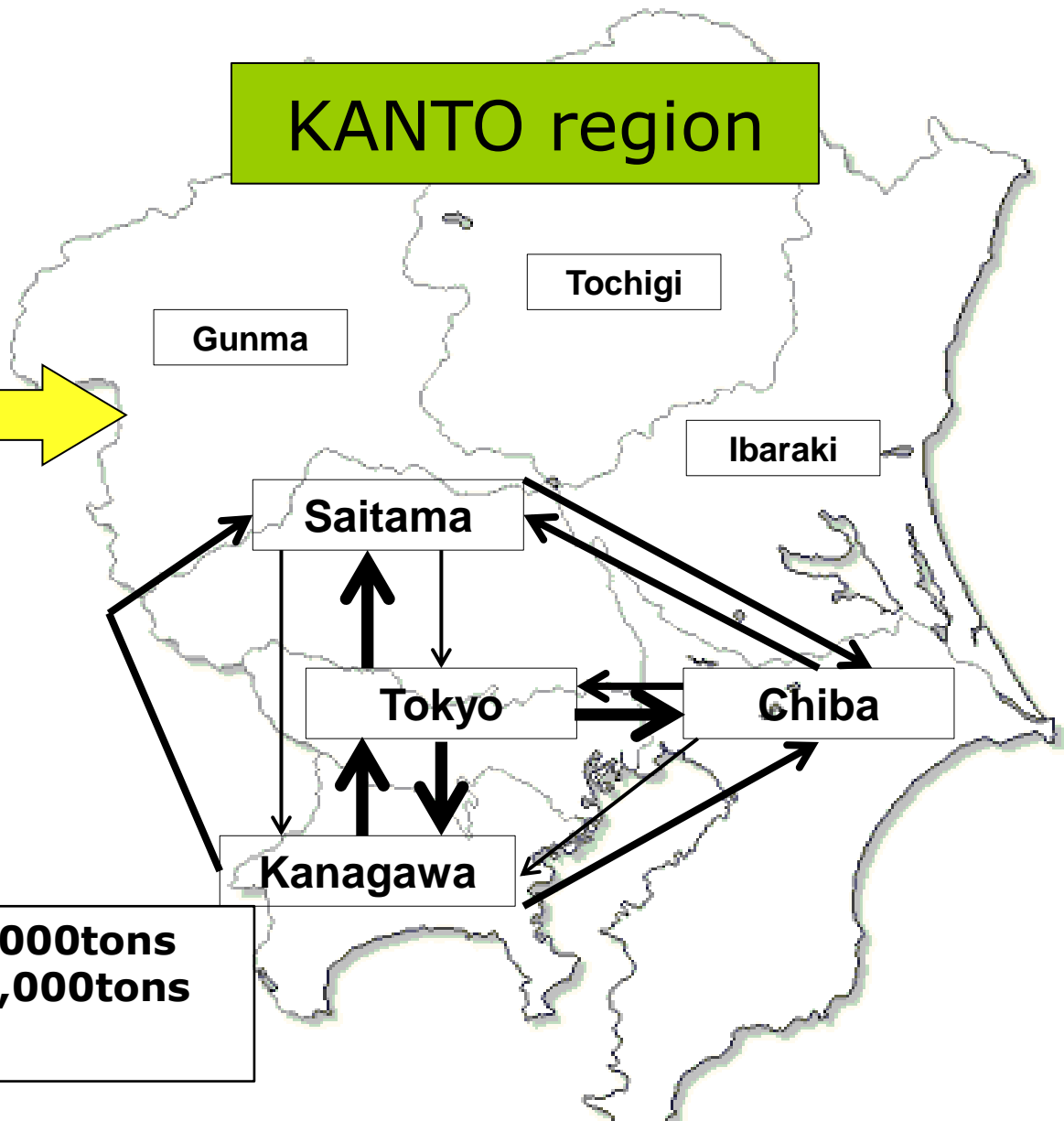
移動先 移動元	北海道	青森県	岩手県	宮城県	秋田県	山形県	福島県	茨城県	栃木県
北海道	322264	11	1	3	170	64	16	4	5
青森県	481726	26525	1500	0	1367	55	7	18	2
岩手県	11	100498	383	3528	1219	0	190	24	81
宮城県	1	501585	2589	1736	2518	0	1969	87	13
秋田県	59	4295	103900	14235	1184	185	226	65	482
山形県	26	17700	440965	8642	5074			272	423
福島県	71	2138	5163	323035	447			1357	1155
茨城県	3	13017	55623	830975	4124			17444	10239
栃木県	2	1923	799	2674	35812	18	53	19	59
群馬県	1	20128	14825	849	121950	499	45	96	149
埼玉県	22	126	1017	1076	1266	90307	915	281	315
千葉県	3	11275	24559	1473	7164	342283	5985	2942	2326
東京都	19	363	3823		108	81	155465	7496	11826
神奈川県	4	123130	163064		1080	4	765343	113172	150250
新潟県	29	8	1		3	23	8941	179586	51488
富山県	7	51	3512	7389	23	171	75683	625724	237503
石川県	92	170	257	873	26	47	7554	19775	170839
福井県	26	2008	4124	8471	23	534	30104	118404	401049
岐阜県	31	473	0	527	107	0	647	3215	25209
静岡県	4	2417	0	3526	1142	0	6374	17232	35424
愛知県	147	86	18	1501	313	253	2105	15632	54897
岐阜県	2	1262	163	7100	2796	1012	22103	151789	70911
愛知県	68	88	92	590	1363	140	1599	30081	10595
東京都	274	2967	56561	8855	13680	435	16140	160968	26852

Number of manifest cases

Commissioned volume



KANTO region



→ 50,000tons ~ 100,000tons
→ 100,000tons ~ 500,000tons
→ 500,000tons ~

Volume of wide-area transportation of industrial waste in the Kanto block₂₄

Current status of long distance transportation of industrial waste by prefecture (registered in the electronic manifest in FY2015)

Prefecture	Transportation volume (t) [①+②+③]	Volume of transportation			Number of manifest cases
		①Volume of transportation within prefecture (t)	②Volume of transportation out of prefecture (t)	③Volume of transportation to prefecture (t)	
北海道	1,045,332	481,726	563,606	3,533	324,979
青森県	511,313	501,585	9,728	226,951	106,841
岩手県	478,113	440,965	37,147	356,000	127,584
宮城県	984,098	830,975	153,123	137,746	345,884
秋田県	276,870	121,950	154,920	44,700	43,669
山形県	569,473	342,283	227,191	11,762	103,312
福島県	2,195,441	765,343	1,430,098	230,794	221,547
茨城県	1,336,106	625,724	710,382	720,038	360,230
栃木県	740,108	401,049	339,059	757,837	260,424
群馬県	435,942	201,030	234,911	190,708	206,449
埼玉県	2,202,594	1,556,846	645,748	3,545,549	1,087,245
千葉県	2,666,236	1,905,343	760,893	3,001,855	982,345
東京都	9,108,915	3,042,841	6,066,074	434,039	4,787,086
神奈川県	4,028,495	2,806,660	1,221,836	1,328,096	1,915,464
新潟県	551,569	489,250	62,319	276,728	224,851
富山県	706,327	580,255	126,072	169,342	163,452
石川県	801,567	641,357	160,210	76,896	239,358
福井県	368,279	169,949	198,330	48,586	101,531
山梨県	173,892	123,410	50,482	10,607	70,892
長野県	424,065	362,022	62,043	37,997	272,504
岐阜県	677,056	434,203	242,853	333,366	226,327
静岡県	2,869,594	2,509,774	359,821	116,260	851,955
愛知県	4,859,146	3,236,958	1,622,187	445,312	1,343,586
三重県	1,450,131	1,106,728	343,403	1,211,974	353,635

Prefecture	Transportation volume (t) [①+②+③]	Volume of transportation			Number of manifest cases
		①Volume of transportation within prefecture (t)	②Volume of transportation out of prefecture (t)	③Volume of transportation to prefecture (t)	
滋賀県	498,323	281,822	216,501	151,067	188,068
京都府	1,586,115	532,666	1,053,448	277,285	337,062
大阪府	4,597,263	2,990,506	1,606,758	700,850	1,072,141
兵庫県	2,945,987	2,008,154	937,833	1,309,672	653,945
奈良県	193,851	108,820	85,031	646,920	93,032
和歌山県	453,497	308,406	145,091	183,461	73,810
鳥取県	100,825	84,903	15,923	42,421	36,853
島根県	170,713	76,150	94,563	25,467	105,709
岡山県	885,222	577,869	307,354	311,459	232,403
広島県	1,715,225	958,950	756,275	259,497	434,188
山口県	1,465,152	1,140,132	325,020	931,166	244,075
徳島県	492,857	154,876	337,981	7,645	58,522
香川県	224,275	205,327	18,948	68,880	99,117
愛媛県	962,004	700,363	261,641	72,253	140,635
高知県	130,708	65,344	65,364	553,886	26,590
福岡県	2,152,461	1,944,110	208,351	1,995,598	585,624
佐賀県	154,580	74,704	79,877	19,743	71,529
長崎県	477,322	148,749	328,573	88,901	93,033
熊本県	295,371	210,469	84,902	33,141	124,393
大分県	547,656	402,272	145,384	537,939	125,494
宮崎県	364,153	263,909	100,244	10,182	106,526
鹿児島県	241,157	216,854	24,303	6,391	126,829
沖縄県	258,817	257,718	1,100	2	73,231
合計	60,374,199	37,391,298	22,982,901	21,950,501	19,823,959

Application in planning and coordination ②

Download of statistical information by sector and waste type

It is possible to download statistical information aggregating waste volume by sector, waste type and prefecture.

【Sample of application】

Basic reference for developing waste treatment plan

Volume of commissioned waste by sector and waste type (registered in the electronic manifest in FY2015)

【Unit: t/year】

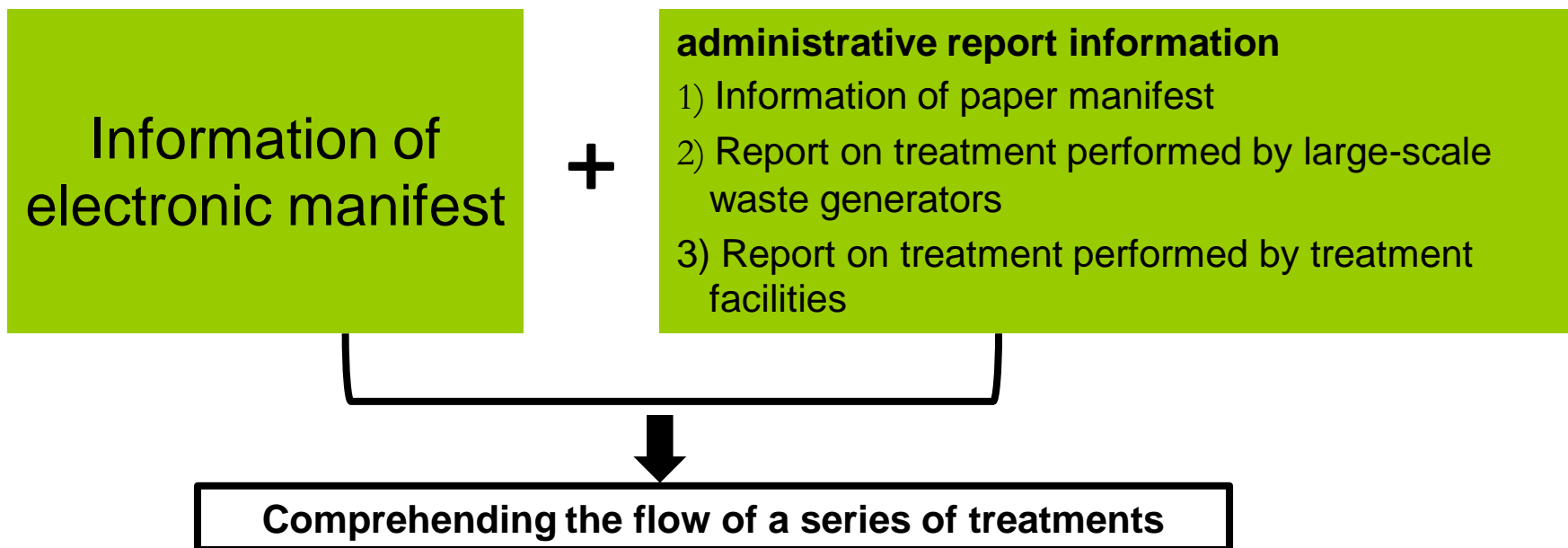
Waste type→	燃え殻	汚泥	廃油	廃酸	廃アルカリ	廃プラスチック類	紙くず	木くず	繊維くず
農業, 林業	135	92	1	352	0	303	0	34	0
漁業	0	0	0	0	0	14	0	0	0
鉱業, 採石業, 砂利採取業	3	16,572	447	146	0	104	12	336	11
建設業	6,793	7,449,986	80,902	1,597	12,740	631,366	157,957	2,467,193	16,279
製造業	656,465	2,891,568	516,247	659,425	476,577	799,436	22,250	274,394	2,429
電気・ガス・熱供給・水道業	691,249	419,013	3,914	467	4,752	7,458	612	2,228	5
情報通信業	0	641	22	53	218	22,687	66	3,980	2
運輸業, 郵便業	1	16,202	637	8,305	485	54,244	175	207,084	2
卸売業, 小売業	3	50,308	20,576	13,573	2,471	324,799	661	39,804	83
金融業, 保険業	0	46	20	1	0	2,380	0	1,133	44
不動産業, 物品賃貸業	0	5,392	1,048	1	36	40,498	8,814	31,734	146

Sector↑

Application in planning and coordination ③

Comprehension of the flow of a series of treatments from discharge of industrial waste to final disposal

Comprehending the flow of a series of treatments from discharge of industrial waste to final disposal using the following information saved and managed by prefectures and ordinance-designated cities in addition to electronic manifest information:



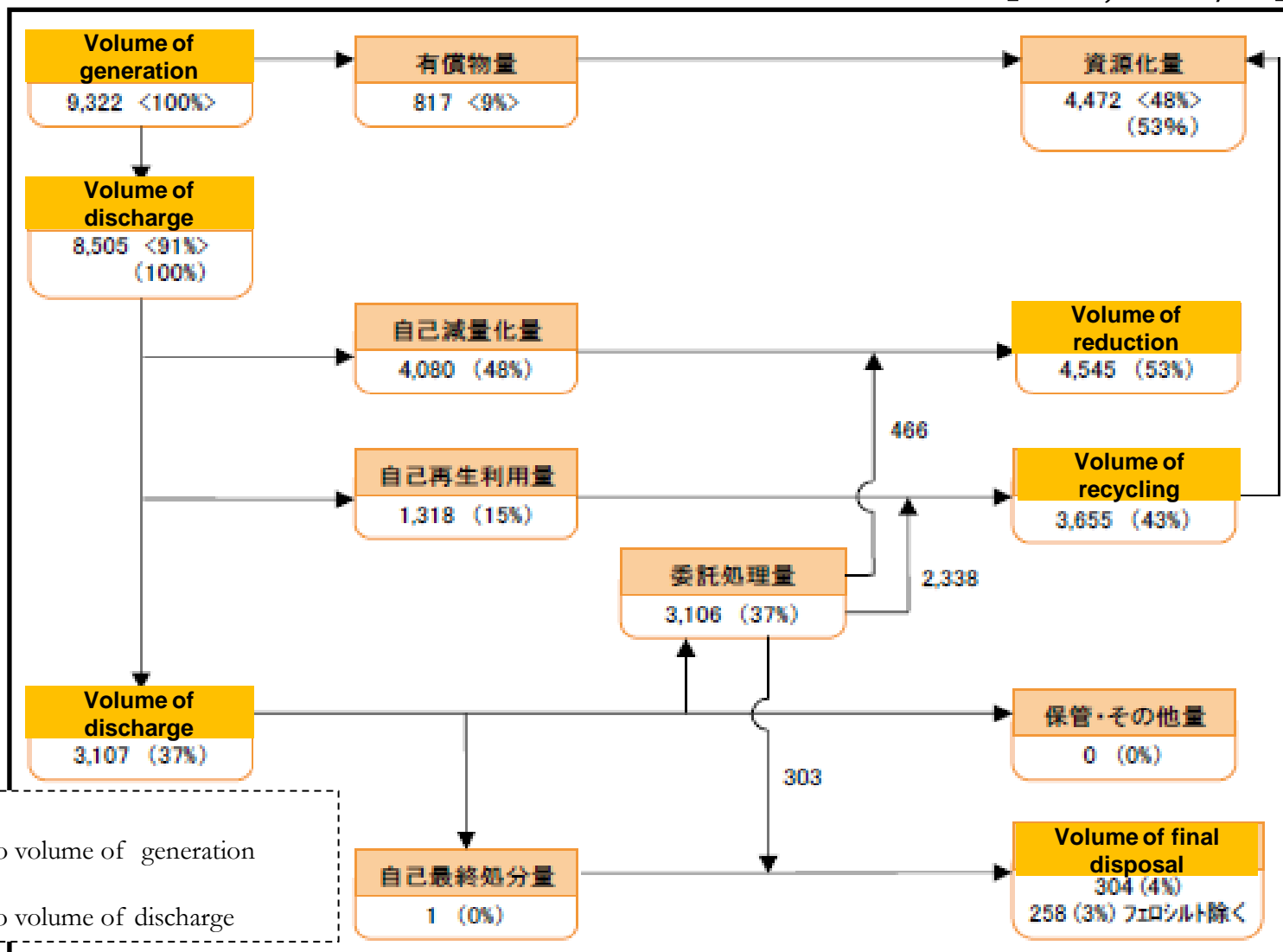
【活用例】

- It is possible to efficiently comprehend the entire flow in prefectures.
- It is possible to quickly monitor the flow of commissioned waste and the recycling rate of commissioned waste

Flow of generation and treatments of industrial waste in M Prefecture

Volume of reduction is 4.5 million tons (53%), volume of recycling is 3.6 million tons (43%) and Volume of final disposal is 0.25 million tons (3%) out of Volume of generation 8.5 million tons.

【unit: 1,000tons/FY】



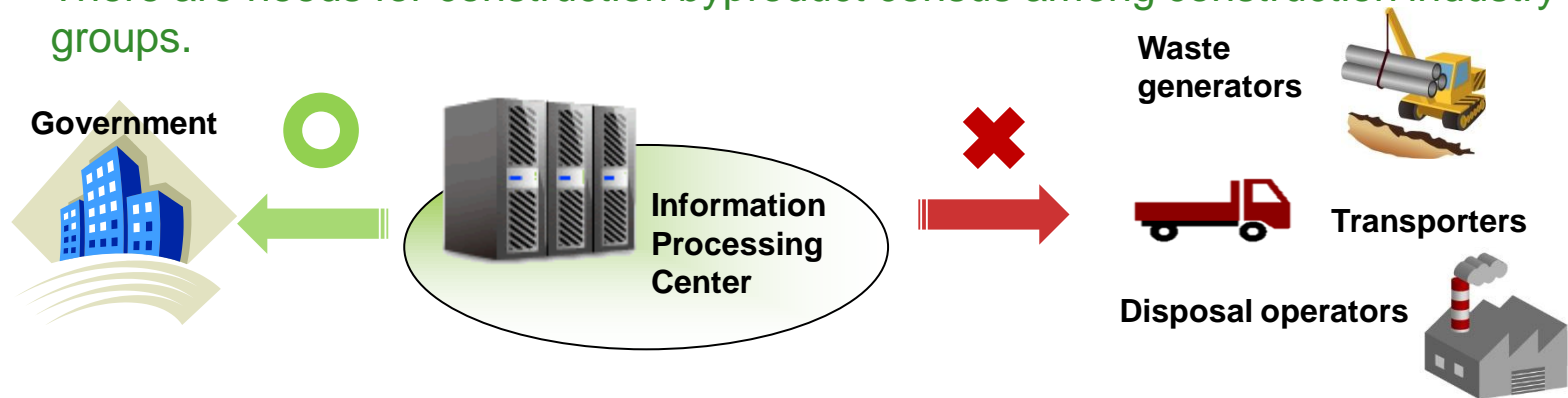
< >: ratio to volume of generation
 (): ratio to volume of discharge

4

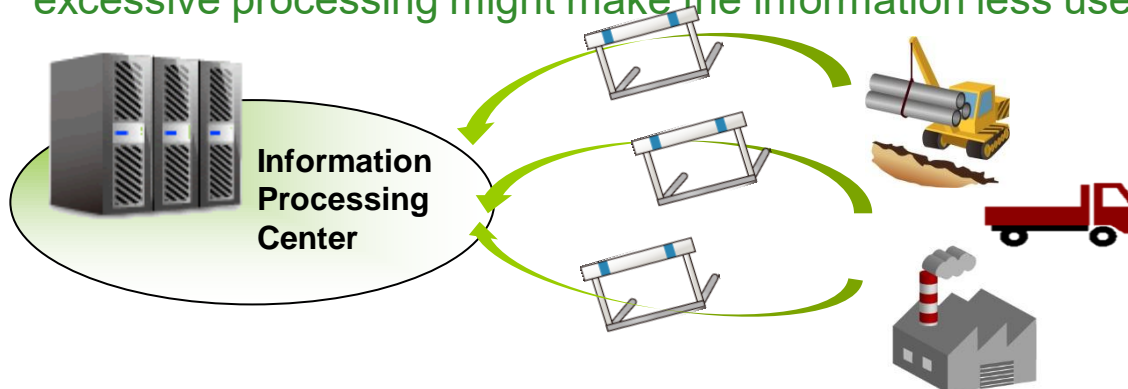
Issues of application of electronic manifest information

Issues of application of electronic manifest information

1. Application of electronic manifest information is limited because no party other than prefectures and ordinance-designated cities can acquire or use electronic manifest information on a national basis
 - There are needs for construction byproduct census among construction industry groups.

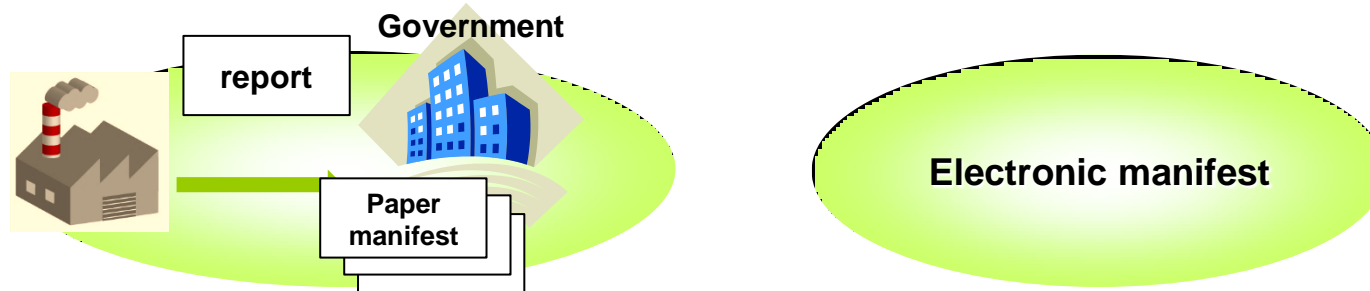


2. Environment is not arranged to apply electronic manifest information as big data.
 - While it is necessary to process information when providing data to a third party so that an individual or a company can not be identified, there is the opinion that “excessive processing might make the information less useful.”



Issues of application of electronic manifest information

- In order to comprehend the flow of industrial waste from generation to final disposal, in addition to the electronic manifest, more information held by prefectures is necessary such as paper manifest, report on treatment by large scale waste generators and treatment at industrial waste treatment facilities.
 - Prefectures and ordinance-designated cities are requesting to establish a mechanism that enables to acquire data on administrative report from the Information Processing Center in an integrated manner.



- The manifest system does not require to input information of “treatment method”.
 - Recycled volume will be clarified and manifest information will be applied in a wider scope by identifying the treatment method.

