

Waste Data Management in Japan: “Local/Municipality Level Data Utilization” *The case of 23 Cities of Tokyo*



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August 27, 2019

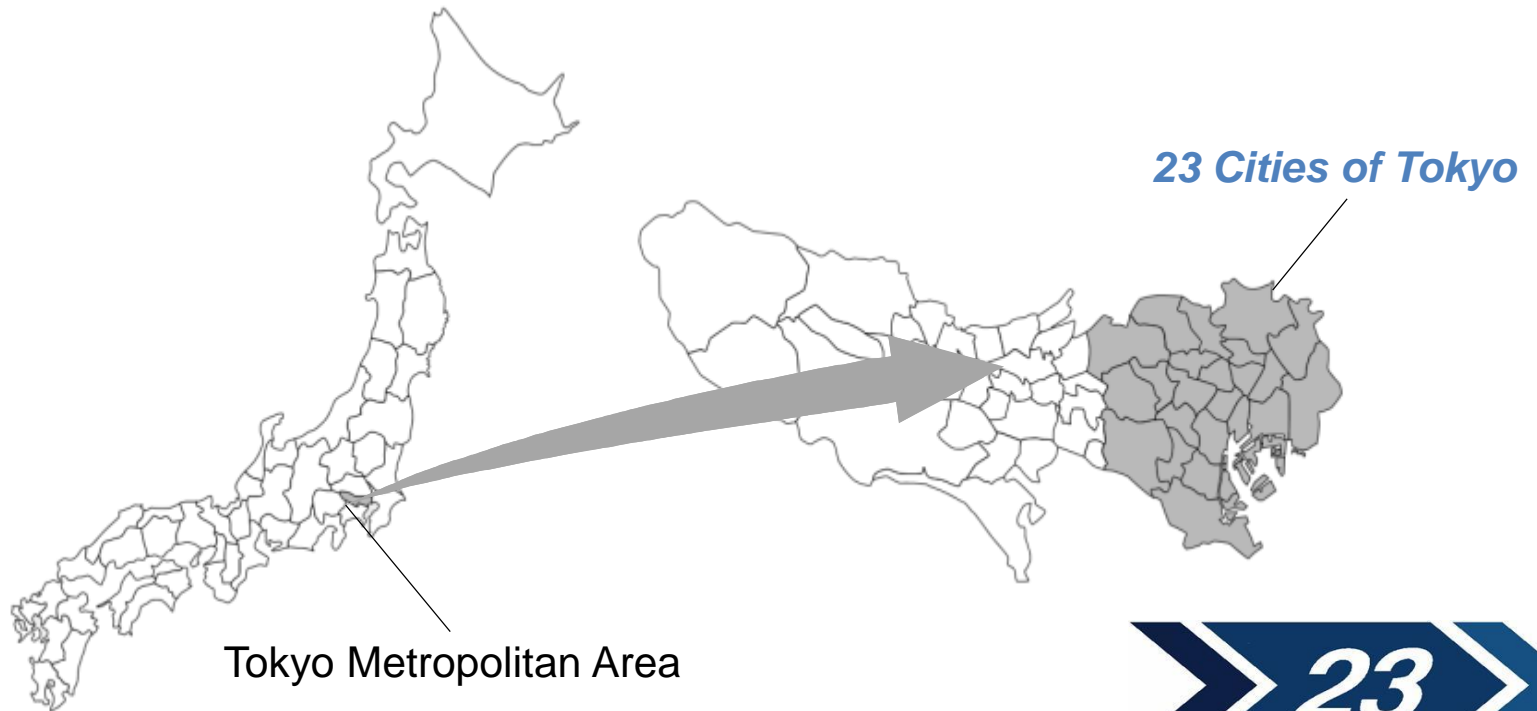


- 1** Overview of the *23 Cities of Tokyo*
- 2** Importance of understanding the volume of waste treated in waste management
- 3** Data management of the volume of waste treated
- 4** Forecasting waste treatment volume and creating a facility reconstruction plan
- 5** Appropriate operation and maintenance at incineration facilities
- 6** Thorough maintenance management and active data/information disclosure

1 Overview of the *23 Cities of Tokyo* ①

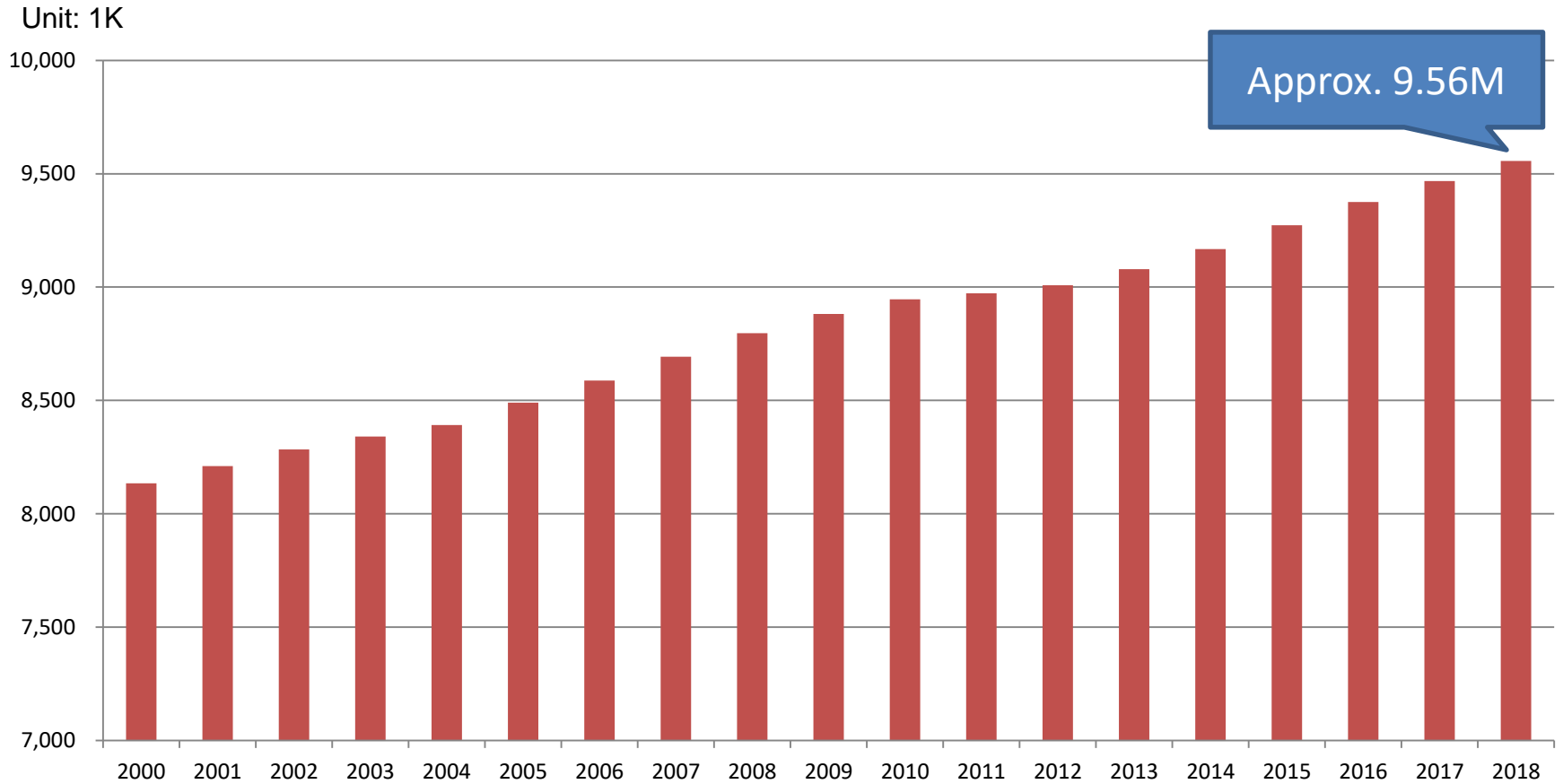
23 Cities of Tokyo
is

- the 23 municipalities in the eastern region of Tokyo Metropolitan Area. It is the central area of Tokyo, in which the core functions of Japan's politics, national administration, and economy are located.
- population of approximately 9.56 million, across the area of 627km².
- where Clean Authority of TOKYO (hereinafter, CAT23), a special purpose municipal body that handles intermediate treatment (incineration, pulverization, etc.) of waste for the 23 Cities of Tokyo.



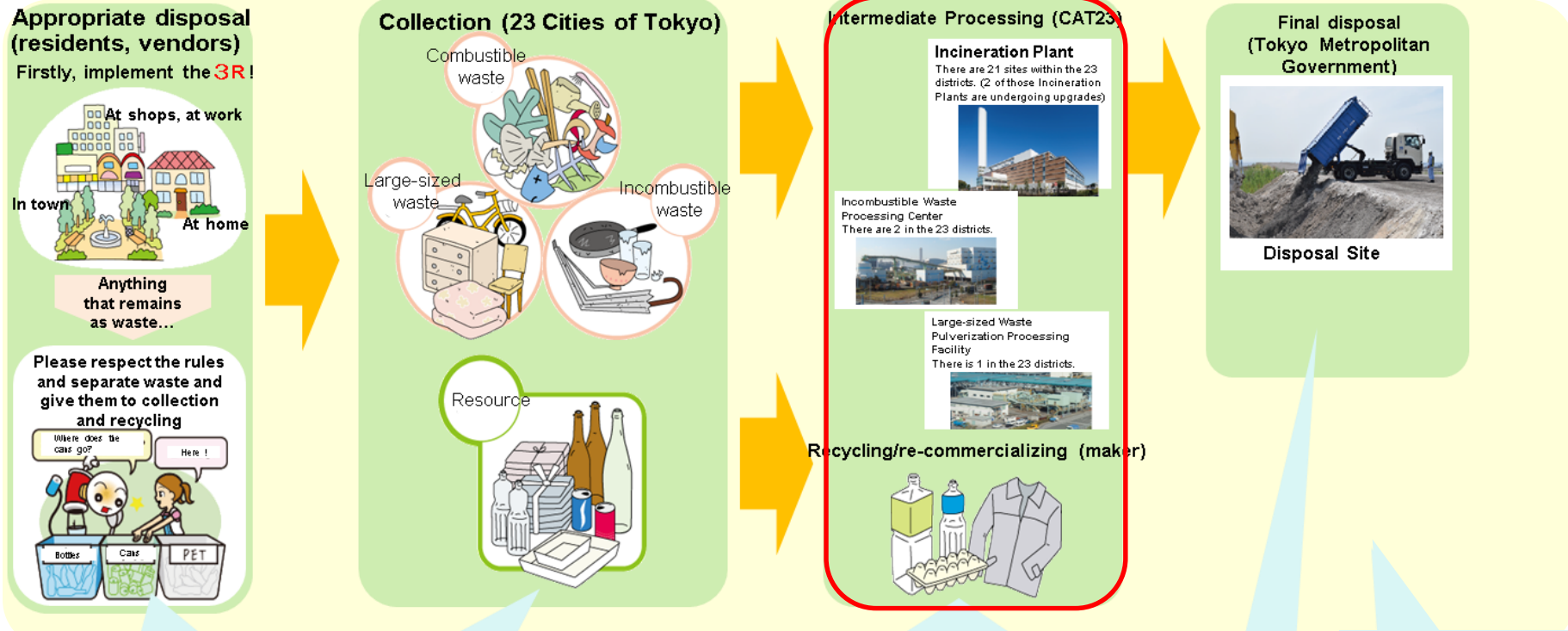
1 Overview of the *23 Cities of Tokyo* ②

Population Trend



1 Overview of the *23 Cities of Tokyo* ③

Waste and resource flow diagrams for the 23 Cities of Tokyo: From SDGs✳ standpoint



- Awareness-raising for sustainable lifestyles
- Promoting the 3Rs



- Quick and reliable collection
- Zero marine waste by appropriate collection



- Safe and hygienic disposals
- Effective usage of thermal energy
- Enforced resource collection
- Minimizing environmental impact



- Full prevention of marine pollution



- Accountability and transparency of local government on waste management

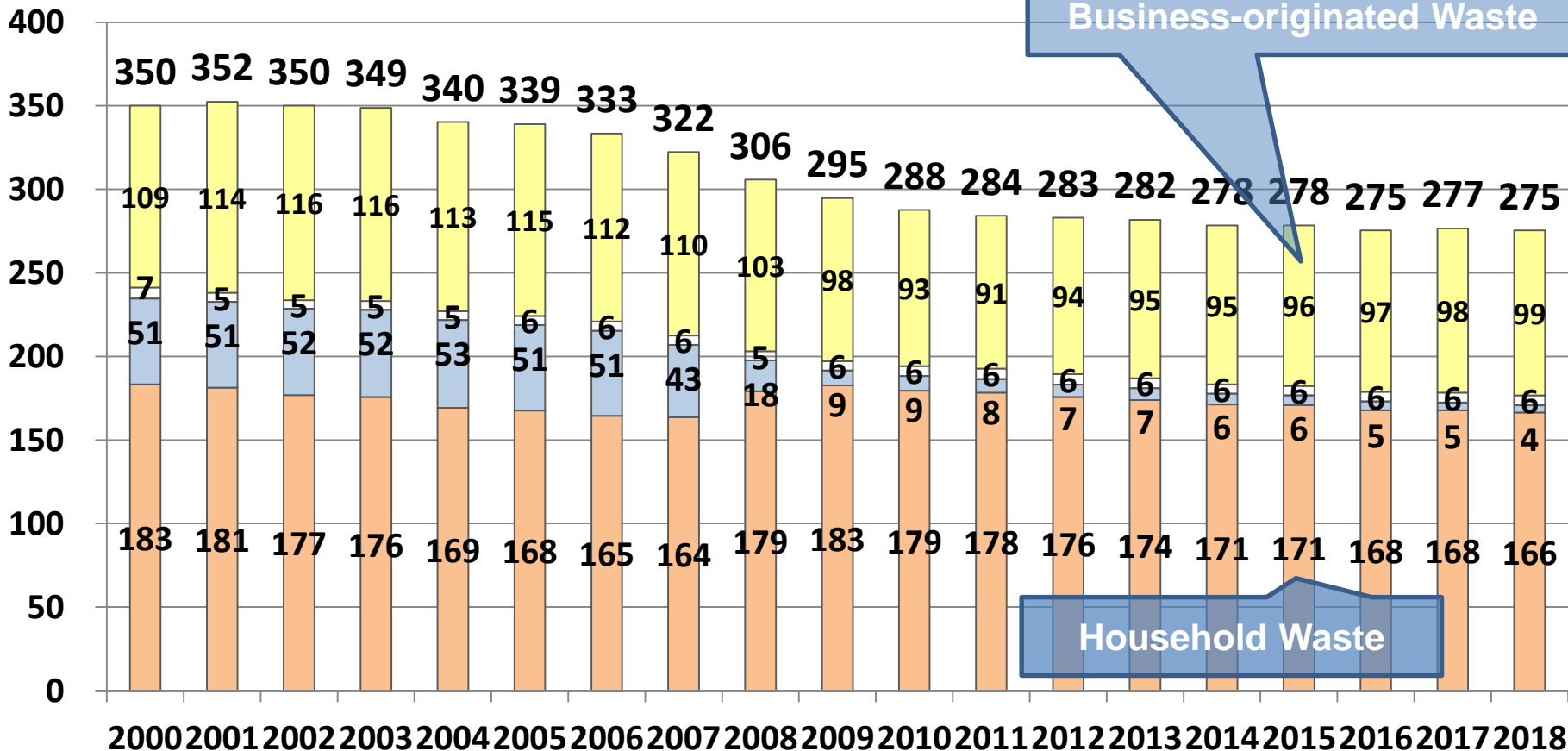


✳ International targets between 2016 and 2030 under “Agenda 2030 for Sustainable Development” adopted at the UN Summit in September 2015

2 Importance of understanding the volume of waste treated in waste management

Waste Volume Trend

Waste volume: 10K tons



3 Data management of the volume of waste treated

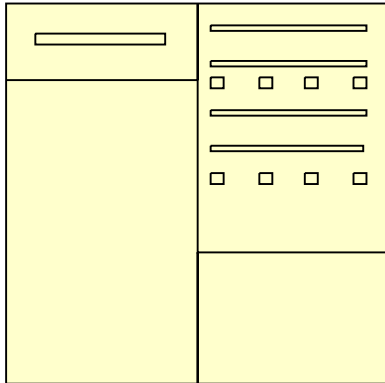
Waste carried into incineration plants by waste collection vehicles are weighed using truck scale, by which data is compiled.



At more than 20 incineration plants and other treatment facilities.



By over 4,000 waste collection vehicles.



4 Forecasting waste treatment volume and creating a facility reconstruction plan ①

Waste Treatment Volume Forecast

- Actual survey of waste generation sources and population forecast
- Forecast based on waste volume forecast and control of waste generation

Unit: 10K tons

	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
① First phase treatment	280	278	276	275	276	276	276	276	276	276	276	275	275	275	274
Waste volume	279	277	275	274	275	275	275	275	275	275	275	274	274	274	273
Incineration plant	263	261	259	258	259	259	259	259	259	259	259	258	258	258	257
Incumbustible waste treatment facility	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Large-sized waste pulverization treatment	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Others (Note)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
② Second phase treatment	9	9	9	9	9	9	9	9	9	9	13	13	13	13	13
Incineration plant	9	9	9	9	9	9	9	9	9	9	13	13	13	13	13

Total volume treated(①+②)	288	286	285	284	284	284	284	284	285	284	288	288	288	287	287
Volume at incineration plant	271	269	268	267	267	267	267	267	267	267	271	271	271	270	270
Volume at incumbustible waste treatment facility	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Volume at large-sized waste pulverization treatment facility	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

Note: Due to rounding up, the numbers may not precisely add up

4 Forecasting waste treatment volume and creating a facility reconstruction plan ②

Facility Reconstruction Plan

Create a 15-year plan starting 2015

Name of plant

工場名	現行規模	計画期間														
		27年度	28年度	29年度	30年度	31年度	32年度	33年度	34年度	35年度	36年度	37年度	38年度	39年度	40年度	41年度
練馬	—	250t×2炉	1	2	3	4	5	6	7	8	9	10	11	12	13	14
杉並	—	300t×2炉			1	2	3	4	5	6	7	8	9	10	11	12
光が丘	150t×2炉	32	150t×2炉					1	2	3	4	5	6	7	8	9
大田(新)	300t×2炉	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
目黒	300t×2炉	25	26	300t×2炉					1	2	3	4	5	6	7	
有明	200t×2炉	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
千歳	600t×1炉	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
江戸川	300t×2炉	19	20	21	22	23	300t×2炉					1	2	3	4	
墨田	600t×1炉	18	19	20	21	22	23	24	25	26	27	28	29	30	600t×1炉	
北	600t×1炉	18	19	20	21	22	23	24	600t×1炉					1	2	
新江東	600t×3炉	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
港	300t×3炉	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
豊島	200t×2炉	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
中央	300t×2炉	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
渋谷	200t×1炉	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
板橋	300t×2炉	13	14	15	16	17	18	19	20	21	22	23	24	300t×2炉		
多摩川	150t×2炉	12	13	14	15	16	17	18	19	20	21	22	23	24	150t×2炉	
足立	350t×2炉	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
品川	300t×2炉	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
葛飾	250t×2炉	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
世田谷	150t×2炉	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
破碎処理	180t×1炉	23	休止	(既存建物の活用を検討)												

Reconstruction period

参考期間																							
42年度	43年度	44年度	45年度	46年度	47年度	48年度	49年度	50年度	51年度	42年度	43年度	44年度	45年度	46年度	47年度	48年度	49年度	50年度	51年度				
15	16	17	18	19	20	21	22	23	24														
13	14	15	16	17	18	19	20	21	22														
10	11	12	13	14	15	16	17	18	19														
16	17	18	19	20	21	22	23	24	25														
8	9	10	11	12	13	14	15	16	17														
35	36	37	38	39	40	200t×2炉																	
35	36	37	38	39	40	41	600t×1炉																
5	6	7	8	9	10	11	12	13	14														
				1	2	3	4	5	6														
										8	9	10	11	12									
										3【参考期間の試算条件】													
										32・ごみ量: 平成41年度ごみ量予測値を用いた。													
										32・規模: 現行規模と同等とした。													
										31	200t×2炉												
										29	30	31	32	33	34	35	36	37	38				
										29	30	31	32	33	34	35	36	37	38				
													1	2	3	4	5	6	7				
													1	2	3	4	5	6	7				
										26	27	350t×2炉							1	2			
										25	26	27	300t×2炉							1			
										24	25	26	27	28	29	30	31	250t×2炉					
										23	24	25	26	27	28	29	30	31	32				

※枠内の数字は稼働年数を示す。

	27年度	28年度	29年度	30年度	31年度	32年度	33年度	34年度	35年度	36年度	37年度	38年度	39年度	40年度	41年度
焼却能力合計(万t)	329.5	322.9	314.5	320.7	320.7	305.3	311.0	309.5	305.9	304.7	320.3	320.7	319.3	302.6	302.6
清掃工場処理量(万t)	271.1	269.2	267.7	266.9	267.3	267.2	267.2	267.1	267.5	267.1	271.2	270.9	271.0	270.4	270.1
焼却余力(%)	21.6	19.9	17.5	20.1	20.0	14.2	16.4	15.9	14.4	14.1	18.1	18.4	17.8	11.9	12.0

	42年度	43年度	44年度	45年度	46年度	47年度	48年度	49年度	50年度	51年度
	305.9	294.6	293.1	298.8	300.3	276.7	274.8	272.6	278.9	280.4
	270.1	270.1	270.1	270.1	270.1	270.1	270.1	270.1	270.1	270.1
	13.3	9.1	8.5	10.6	11.2	2.5	1.8	0.9	3.3	3.8

[凡例]

- 建替え工事 (解体前清掃、解体工事、建設工事、試運転を含む)
- ※工事期間枠内は、1炉当たりの規模及び炉数を示す。
- なお、炉数については現行と同じとした。
- 建替え工事予定(参考)
- 延命化工事

※延命化工事の焼却炉停止期間は、6か月/炉 (600 t / 炉の場合は7か月) とする。
 複数炉工場は、1炉/年の施工とし、工事期間は複数年にわたる。
 1炉工場の工事期間は、炉停止期間や共通系工事を考慮し、2か年とした。
 ※豊島工場は30年超の稼働となるので、稼働25、26年時に大規模補修工事期間を見
 ※灰溶融処理施設の整備については、今後のスラッグの利用状況等を見ながら改めて

図-6-1 清掃工場の整備スケジュール



5 Appropriate operation and maintenance at incineration facilities



Appropriate operation and maintenance work is implemented, so that each facility/equipment can perform its functions.

✓ Perform a comprehensive overhaul once a year

✓ Continuous feeding of fixed quantity of uniformly mixed waste

✓ Analyze waste property 4 times a year

✓ Combustion gas temperature must be measured continuously
 ✓ Maintain at above 800°C
 ✓ Furnace temperature should be raised quickly using a combustion support device at start of operation such as after shut down
 ✓ Waste should be completely incinerated using a combustion support device when terminating operation for shut down.

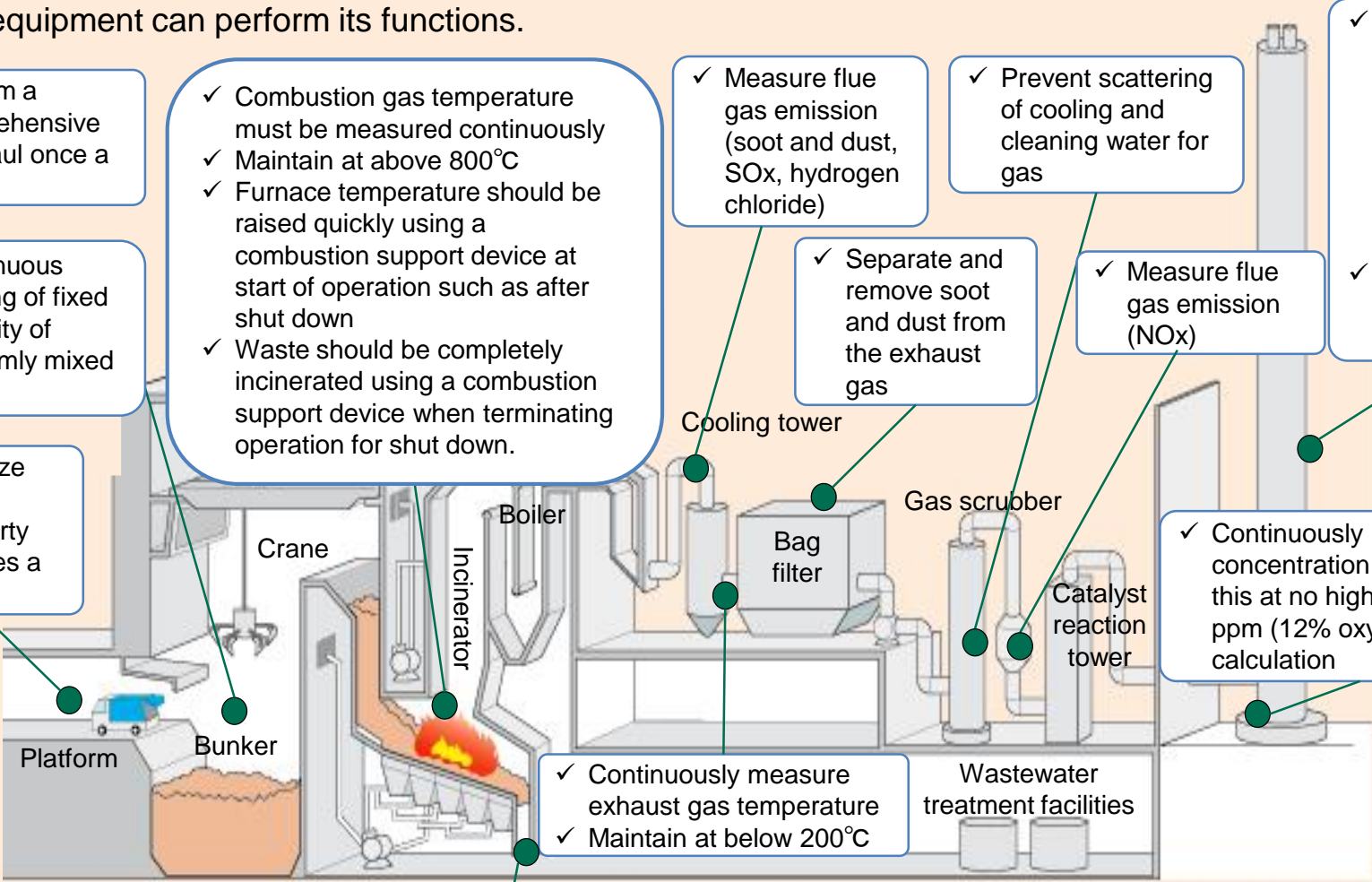
✓ Measure flue gas emission (soot and dust, SOx, hydrogen chloride)

✓ Prevent scattering of cooling and cleaning water for gas

✓ Separate and remove soot and dust from the exhaust gas

✓ Measure flue gas emission (NOx)

✓ Continuously measure soot and dust, NOx, SOx, hydrogen chloride, and mercury
 ✓ Measure dioxins once a year



✓ Continuously measure exhaust gas temperature
 ✓ Maintain at below 200°C

✓ Ignition loss of ash to 10% or less

6 Thorough maintenance management and active data/information disclosure

Long-term stable operation

- ✓ At bidding stage, evaluate for cost reduction technology throughout the plant lifecycle
- ✓ All furnaces are overhauled, once a year
- ✓ Key equipment focused works are applied after 15 years into operation

Have realized operation period of 25-30 years.
We are also implementing works to prolong operations up to 40 years.

Thorough maintenance and pollution control

- ✓ Stable operation is realized in light of maintenance management plan based on self-regulated values in alignment with the law
- ✓ Setup self-regulating values stricter than the regulatory values of Japan and Tokyo, and enforce prevention of pollution
- ✓ In order to maintain the environment of residents around the incineration plant, the number of waste collection vehicles bringing in waste and its route is being well controlled.

Active information disclosure

Environment Measurement Results

- ✓ Measurements of waste gas, waste water, main properties of ash and soot, atmospheric environment around the incineration plant, and dioxin concentrations (exhaust gas, bottom ash, fly ash, wastewater, etc.) are all publicized on the website



Incineration plants display gas status on a display in real time (Setagaya Incineration Plant)

Continuous Measurements Results

- ✓ Publicize incineration room gas temperature, dust collector entry gas temperature, and CO concentration in exhaust gas through the website

Environment Report

- ✓ All incineration plants issue this report once a year. It covers the management policy, treatment process, various data, and plant tour participants data are publicized on the website



Environment Report 2016 (Ota Incineration Plant)

Operations Council

- ✓ Held regularly at the incineration plant. Operation status including breakdowns and incidents are reported.

Incineration Plant Newsletter

- ✓ All incineration plants issue a newsletter and it is publicized on the website



Thank you very much
for your attention !