



# History and Current Situation of Wastewater Treatment and Legal Framework of Johkasou in Japan

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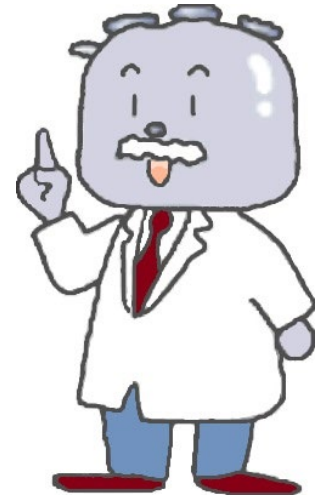
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Ministry of the Environment  
Government of JAPAN

<https://www.env.go.jp/recycle/jokaso/en/>

1. History and Current Situation of Wastewater Treatment in Japan
2. General Information of Johkasou
3. Legal Framework of Johkasou in Japan



# Water pollution in Japan during rapid economic growth



Sumida River (Tokyo)  
in the 1970s



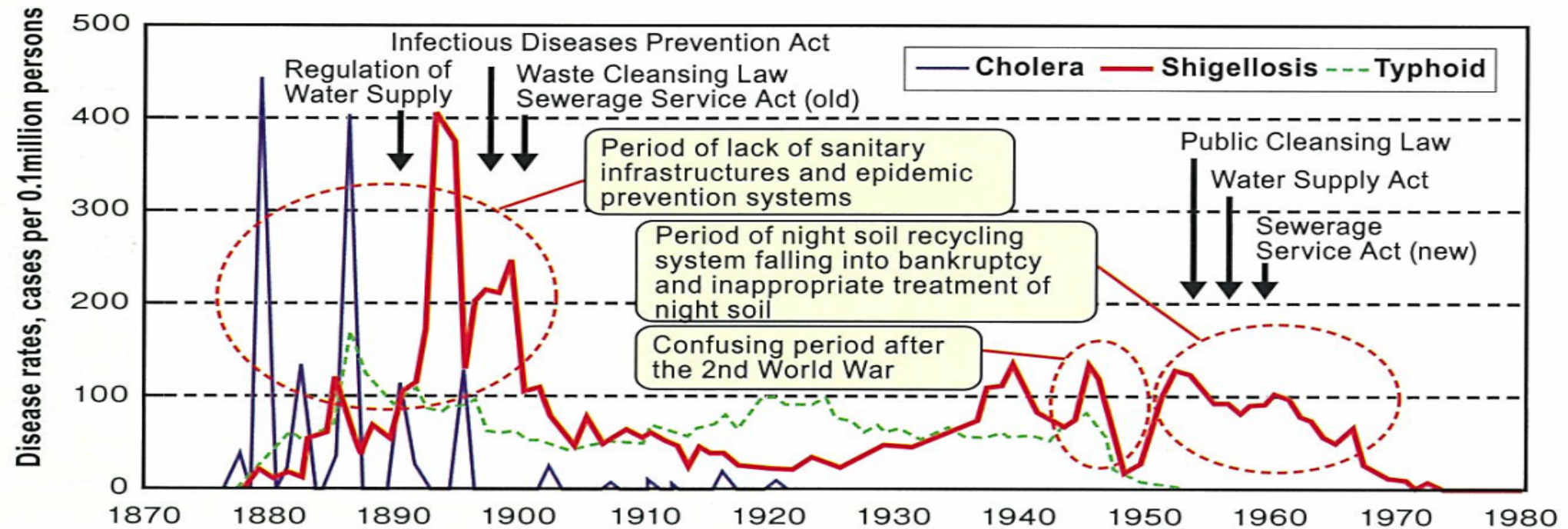
Dohkai Bay (Kitakyushu)  
in the 1960s



Chofu Weir, Tama River (Tokyo)  
in the 1970s

# History of wastewater treatment and infectious diseases

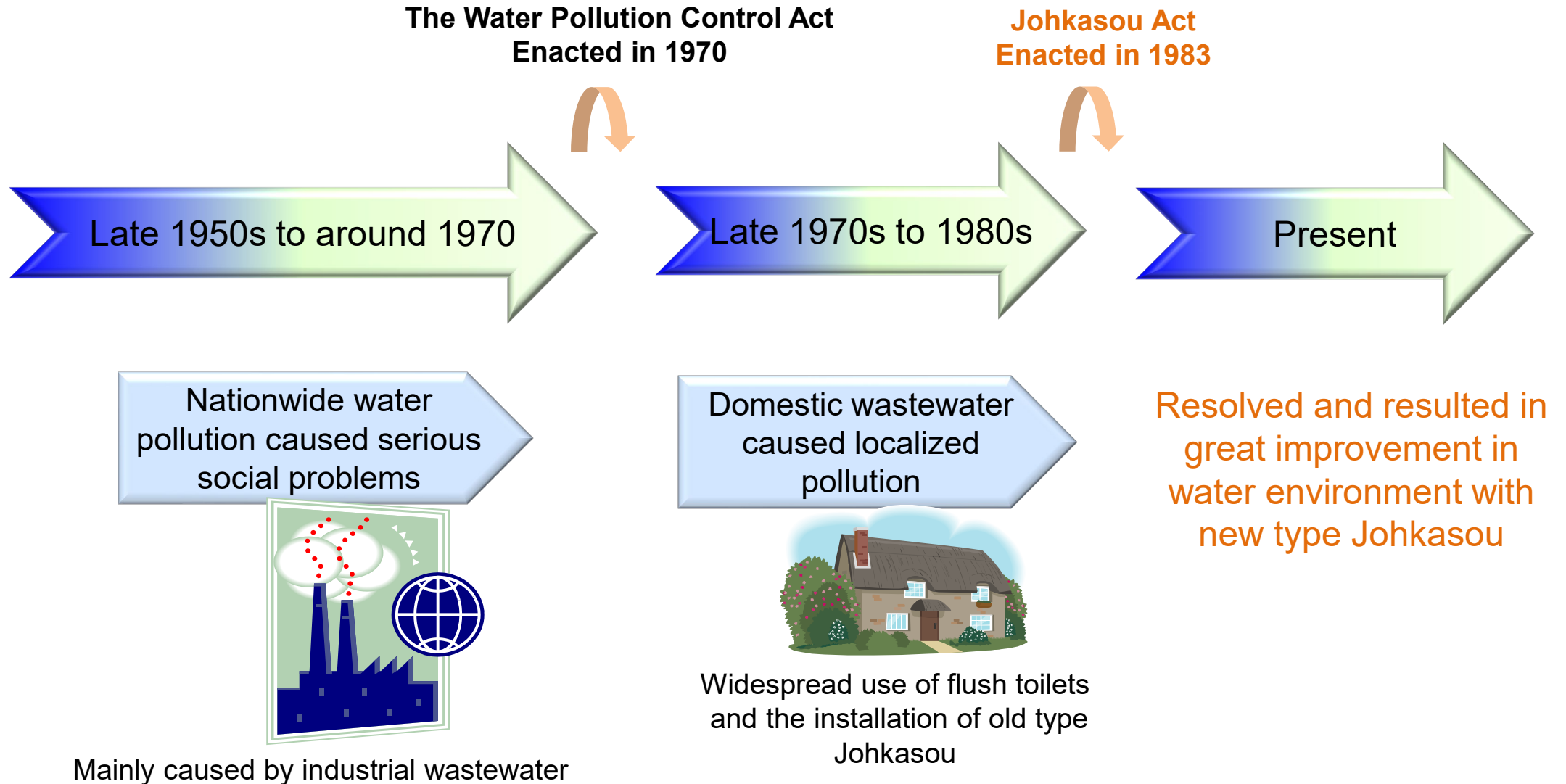
- Up to the 1950s, night soil had been used as agricultural fertilizer and regarded as resource.
- From the late the 1950s, night soil turned from “fertilizer” to “waste” due to the spread of chemical fertilizer and urbanization. The lack of night soil treatment facilities and hygienic treatment resulted in a serious social problem.
- Spread of infectious diseases had continued until the rapid economic growth period of the 1970s.



Trends of waterborne disease rates in Japan

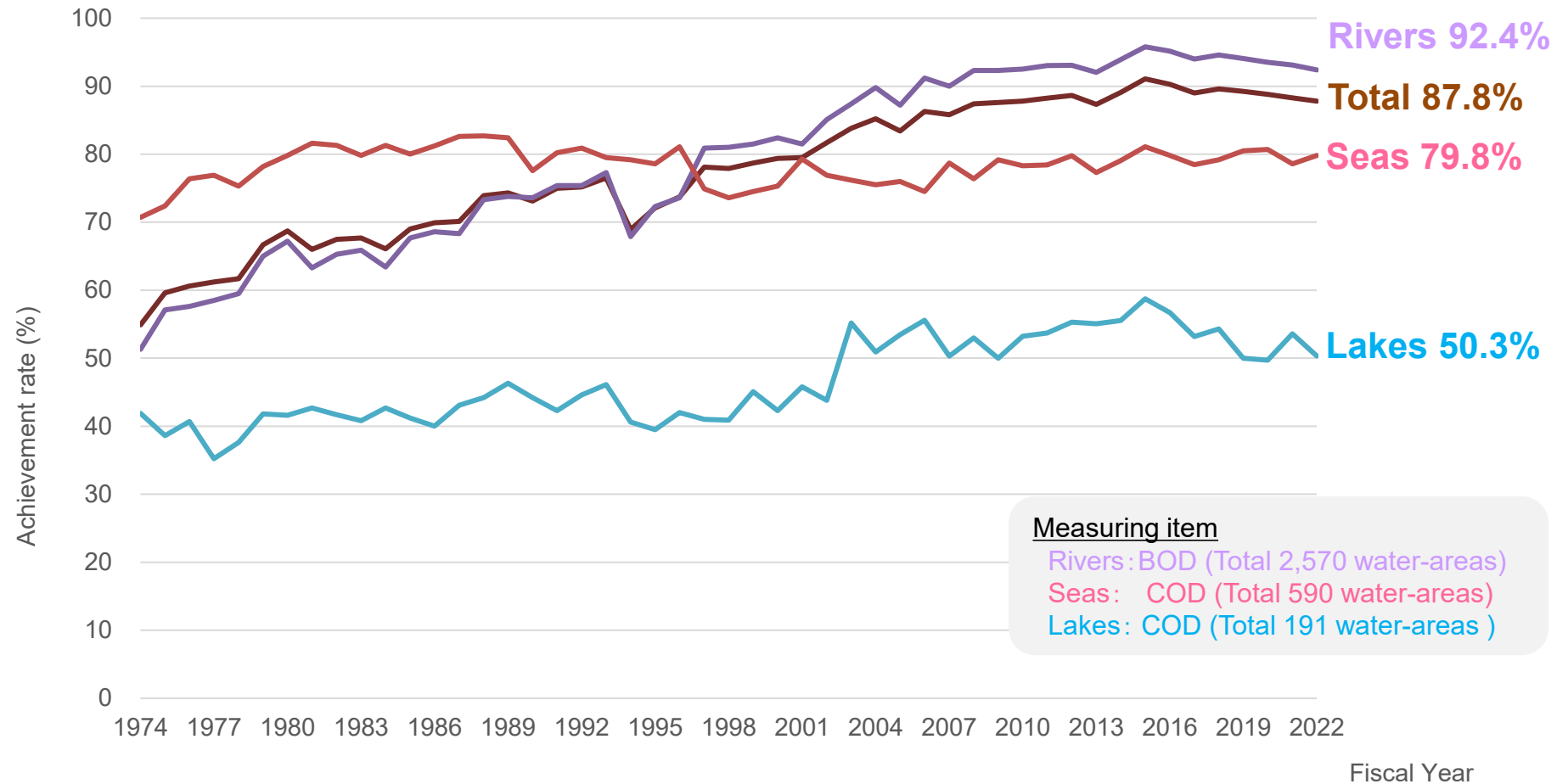
Reference: Yuzo Inoue, History and technology of night soil treatment in Japan, J. of Monthly Johkasou

# Domestic wastewater treatment issues in Japan





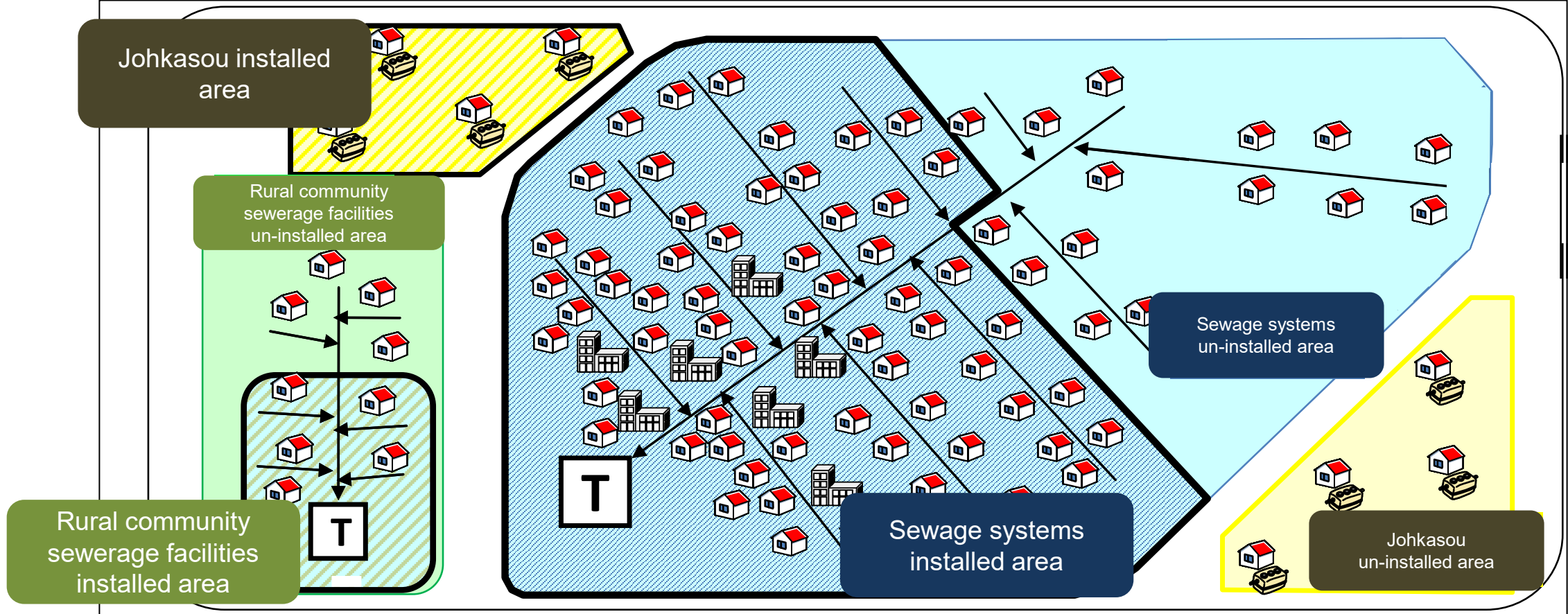
# Achievement of water quality related to Effluent Standards



## Public waters water quality measurement results (2022)

Ministry of the Environment, Government of Japan

# Domestic Wastewater Treatment Systems in Japan



- **Sewage Systems** : managed by the Ministry of Land, Infrastructure, Transport and Tourism
- **Rural community sewerage facilities**: managed by the Ministry of Agriculture, Forestry and Fisheries
- **Johkasou**: managed by the Ministry of the Environment

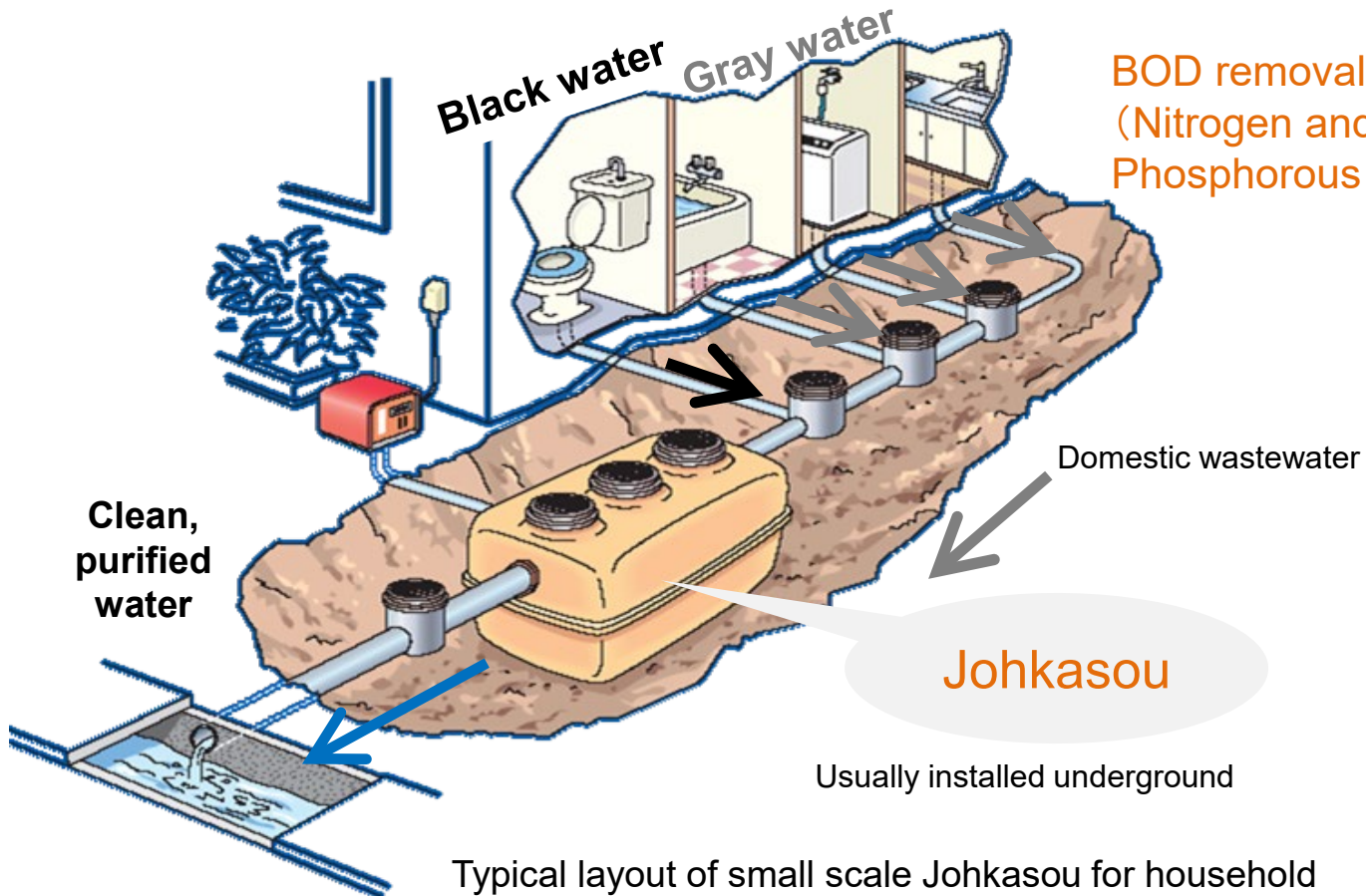
# Current situation of population served for treating domestic wastewater

Type of treatment facility	Population served (x 1,000 people)	
	End of FY2022	End of FY2021
<b>Sewage systems</b>	<b>101,280 (81.0%)</b>	101,181 (80.6%)
<b>Rural community sewerage facilities</b> including Facilities for fishing villages, Facilities for forestry villages, Simple wastewater facilities	<b>3,018 (2.4%)</b>	3,103 (2.4%)
<b>Johkasou</b>	<b>11,784 (9.4%)</b>	11,758 (9.4%)
Municipal Johkasou Installation Program	825	831
Johkasou Installation and Maintenance Program	6,229	6,203
Other Johkasous	4,730	4,725
<b>Community plants, etc.</b>	<b>160 (0.1%)</b>	171 (0.1%)
Total population served	116,242	116,213
<b>Percentage of population served</b>	<b>92.9%</b>	92.6%
Total population	125,065	125,540
Total population not served	8,823	9,327
<b><u>Population without domestic wastewater treatment</u></b>	<b><u>7.1%</u></b>	<b><u>7.4%</u></b>



# General Information of Johkasou

- “Johkasou” is categorized as **decentralized wastewater treatment system** for domestic wastewater discharged by household, building and so-on.“
- Johkasou have a combined purification structure capable of treating both **night soil (black water)** and **miscellaneous wastewater (gray water)**.
- Johkasou attains high and stable performance as same as that of sewage treatment plant and it has been installed totally more than 4 million units in Japan.

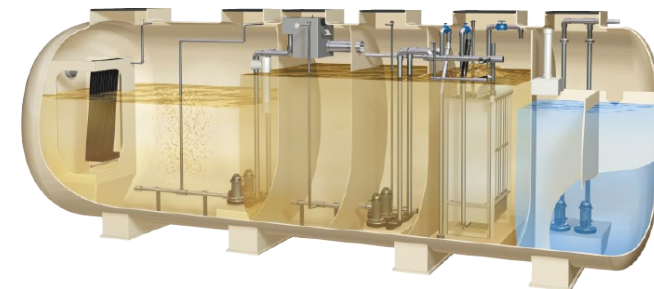


Small size  
(5 to 50 PE,  $\leq$   
 $10\text{m}^3/\text{day}$ )



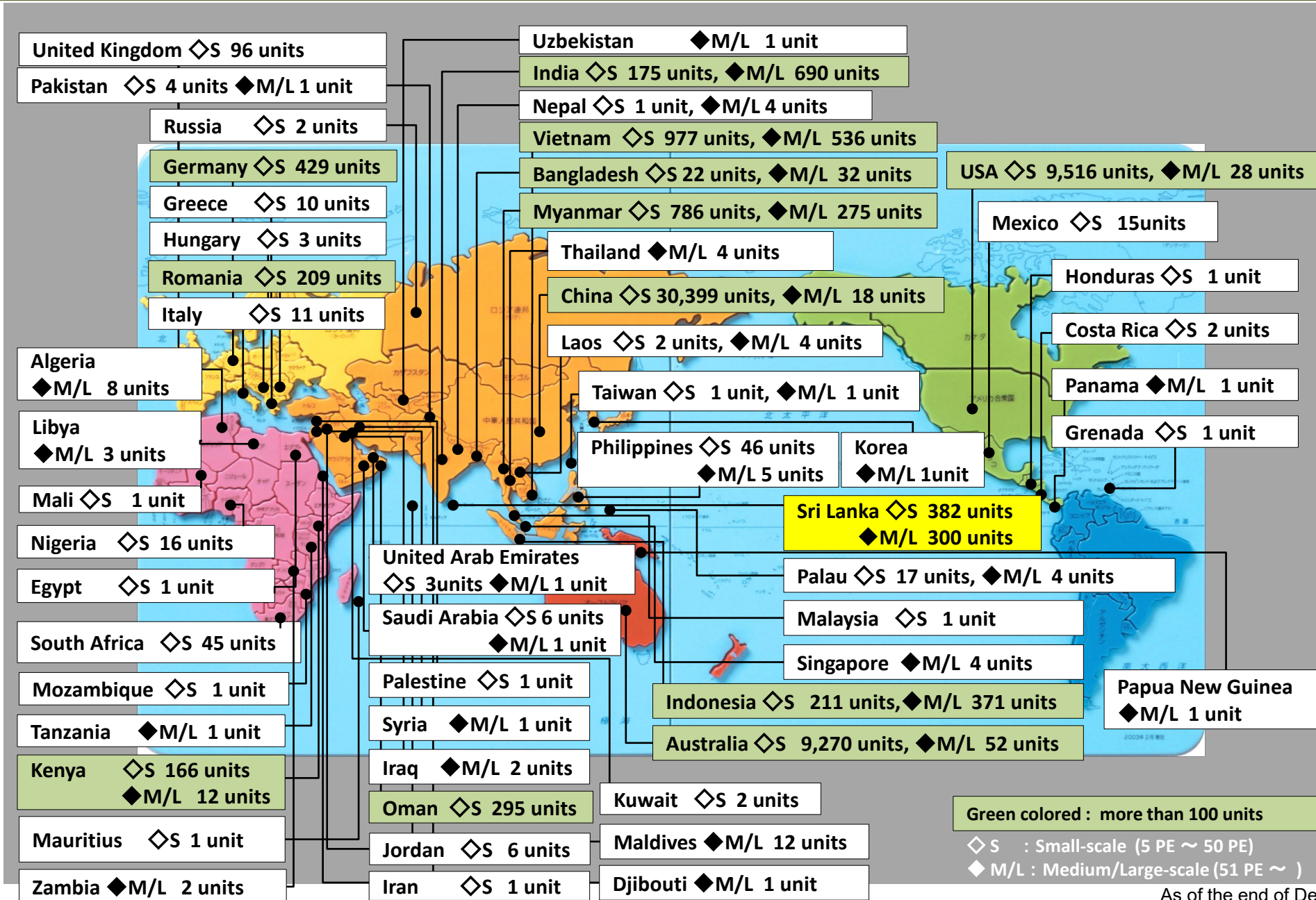
Box shape

Medium and  
large size  
(51 PE or over,  $>$   
 $10\text{m}^3/\text{day}$ )



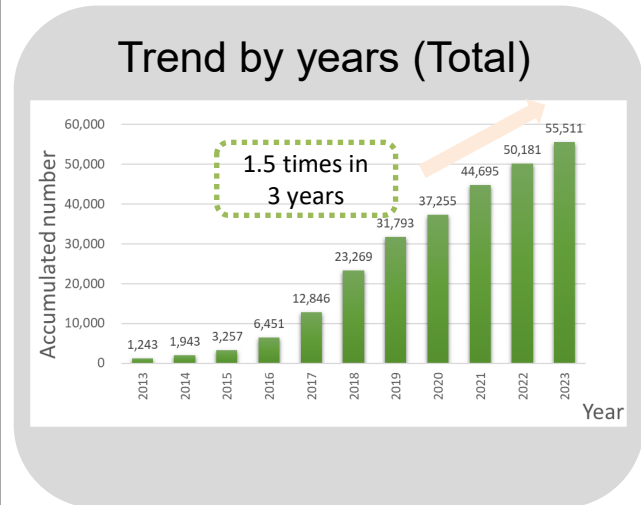
Cylindrical shape

# Installation Records of Japanese Johkasou Overseas

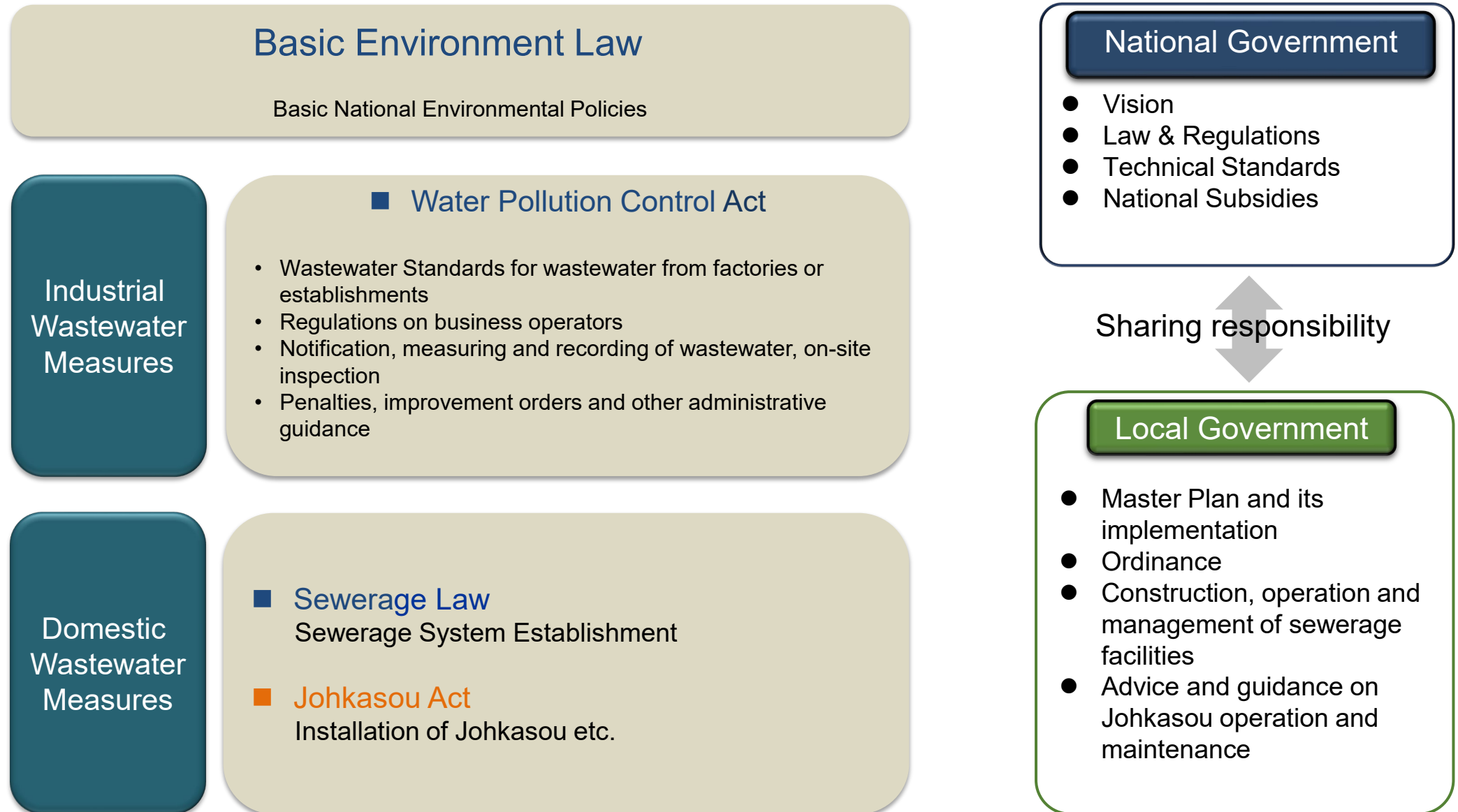


Johkasou contributes toward achieving the SDG 6 targets

◇ Small	53,134 units
◆ Medium/Large	2,377 units
<b>TOTAL</b>	<b>55,511 units</b>
	55 countries



# Overall concept of water environment improvement and related legal framework



# Johkasou Act

## ■ Purpose

- Strengthen **regulations** of manufacturing, installation, operation, maintenance and desludging of Johkasou.
- Provides **qualifications** for Johkasou installation workers and operators
- Provides **registration systems** for Johkasou installation vendors and maintenance vendors
- Provide **licensing systems** for desludging vendors



**Promotion of domestic wastewater treatment by Johkasou for conservation of water quality in public water area, preservation of the living environment and improvement of public health**

## ■ Definition

- Johkasou is the decentralized wastewater treatment facility that can treat both **black water** and **gray water** from household, building and so on and discharge effluent comply with effluent standards.
- Johkasou should be installed when installing a flush toilet under the Building Standard Law, unless the wastewater is discharged to sewerage systems.

## ■ Related Laws

**Johkasou Act**

Enacted in 1983



**Enforcement Ordinance**

Define the scale of Johkasou which need Johkasou Operators etc.



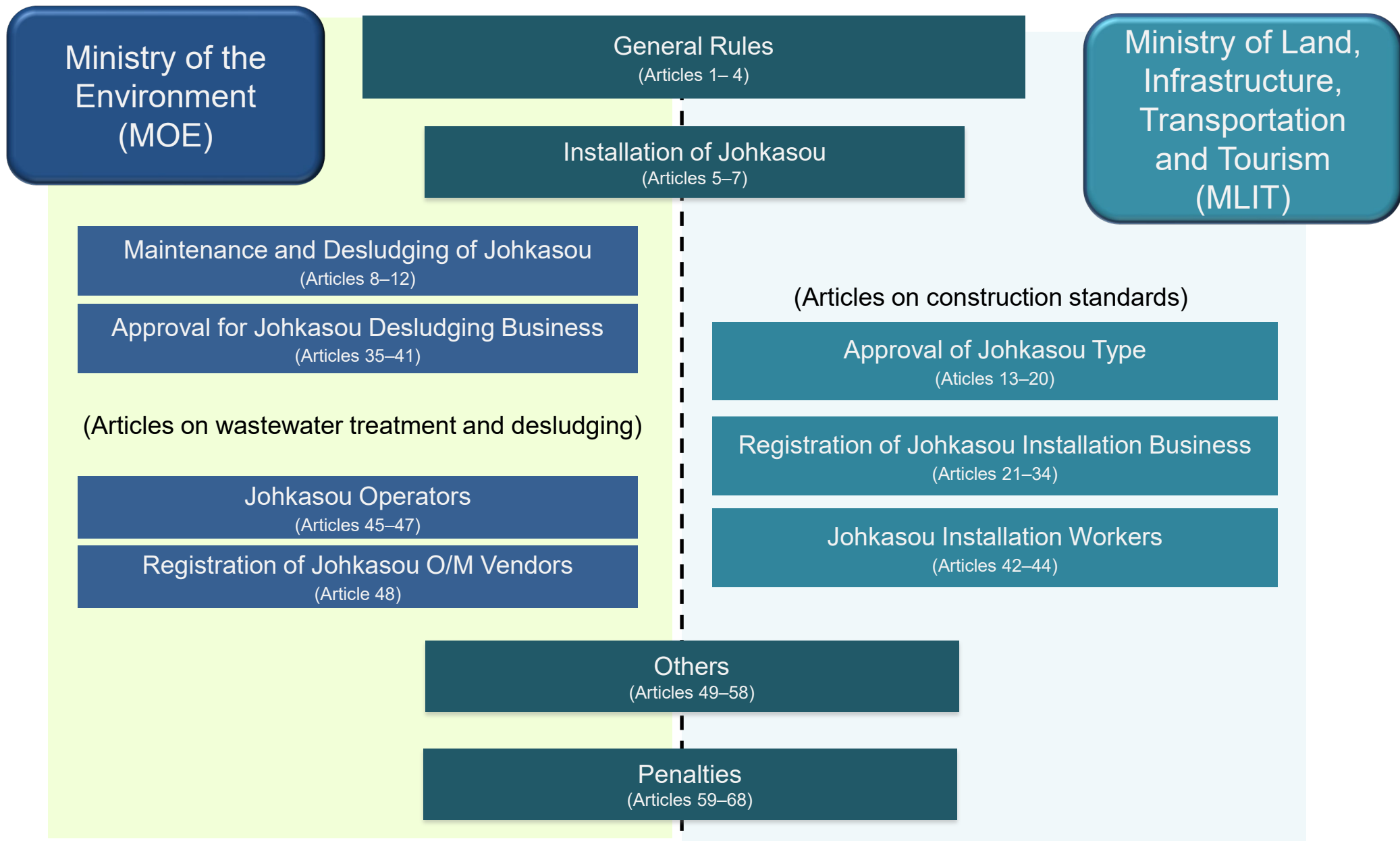
**Enforcement Regulations**

Define the period of inspection, desludging or the technical standard of desludging etc.

# History of Johkasou Act

1960 to around 1980	Widespread use of flush toilets and the installation of old type Johkasou ( treating black water only)
1983	Johkasou Act enacted (enforced in 1985)
2000	New installation of old type (Tandoku-shori) Johkasou was prohibited
2005	Stricter water quality management systems introduced
2019	<ul style="list-style-type: none"><li>• Strengthening the authority of prefectural governors for conversion from old type to the current type (Gappei) Johkasou</li><li>• Clarification for proceeding Johkasou installation as a public works</li><li>• Others</li></ul>

# Outline of Articles and its jurisdiction in Johkasou Act





# Inspection and Maintenance of Johkasou



Johkasou Inspector

## Legal inspection by Article 7

### Purpose

Confirm if construction/ installation and treatment performance are good.

### Contents

- Visual inspection
- Water quality inspection
- Document inspection

### Timing of implementation

Three to eight months after starting operation

### Responsible organization

Specified inspection agency, which is a public service corporation of the prefecture.



Johkasou Operator

## Operation/ Maintenance

### Purpose

Maintain a normal treatment performance

### Contents

- Sludge accumulation
- Water quality
- Mechanical apparatus
- Replenish disinfectant

### Frequency

Over three times a year, depending on the size and the treatment process

### Responsible organization

Johkasou maintenance vendor, who is licensed by the prefectural governor.



Johkasou Desludging Technician

## Desludging

### Purpose

Recover normal treatment performance normally

### Contents

- Removing sludge
- Cleaning the Johkasou
- Confirming if there are faults or defects inside the Johkasou

### Frequency

Once a year

### Responsible organization

Johkasou desludging vendor, who is registered by the mayor.



Johkasou Inspector

## Legal inspection by Article 11

### Purpose

Confirm if the maintenance and desludging is done appropriately, and if the treatment performance is good.

### Contents

- Visual inspection
- Water quality inspection
- Document inspection

### Frequency

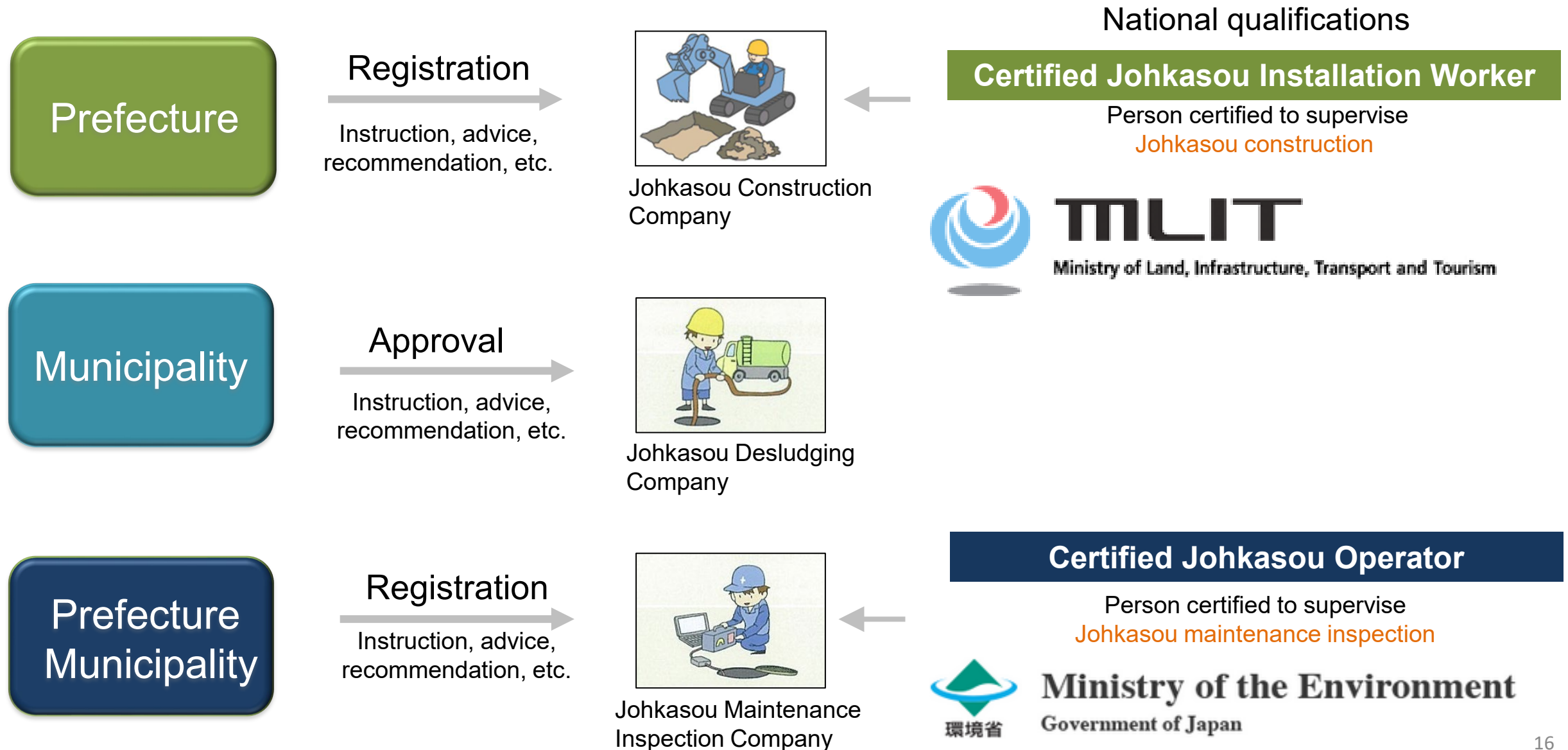
Once a year

### Responsible organization

Specified inspection agency, which is a public service corporation of the prefecture.



# Registration process and qualifications system



# Training courses for Johkasou Technicians

- Johkasou Technicians should acquire extensive knowledge not only on wastewater treatment and Johkasou, but also on water environment conservation and public health.
- Curriculums for Johkasou Operator and Johkasou Installation Worker are as below.

## Johkasou Operator

by Article 45

- |                                              |        |
|----------------------------------------------|--------|
| ● Basic of Johkasou                          | 8 hrs  |
| ● Laws and regulations related with Johkasou | 4 hrs  |
| ● Structure and function of Johkasou         | 22 hrs |
| ● Introduction of installation of Johkasou   | 4 hrs  |
| ● Operation and maintenance of Johkasou      | 30 hrs |
| ● Water quality management of Johkasou       | 10 hrs |
| ● Introduction of desludging of Johkasou     | 2 hrs  |



**Total 80 hours (13 days)**  
**Test 2 hours**

## Johkasou Installation Worker

by Article 42

- |                                                  |        |
|--------------------------------------------------|--------|
| ● Basic of Johkasou                              | 8 hrs  |
| ● Laws and regulations related with Johkasou     | 3 hrs  |
| ● Structure and function of Johkasou             | 15 hrs |
| ● Management of Johkasou installation            | 8 hrs  |
| ● Introduction of O&M and desludging of Johkasou | 3 hrs  |



**Total 37 hours (5 days)**  
**Test 2 hours**



# Thank you for your kind attention

Check Japan's Johkasou System on Youtube 

<https://www.youtube.com/watch?v=r4xOKGbYWes>

