



# Lesson Learnt from Japan's Experience from the perspective sustainability on domestic waste water management

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JAPAN

Ministry of the Environment



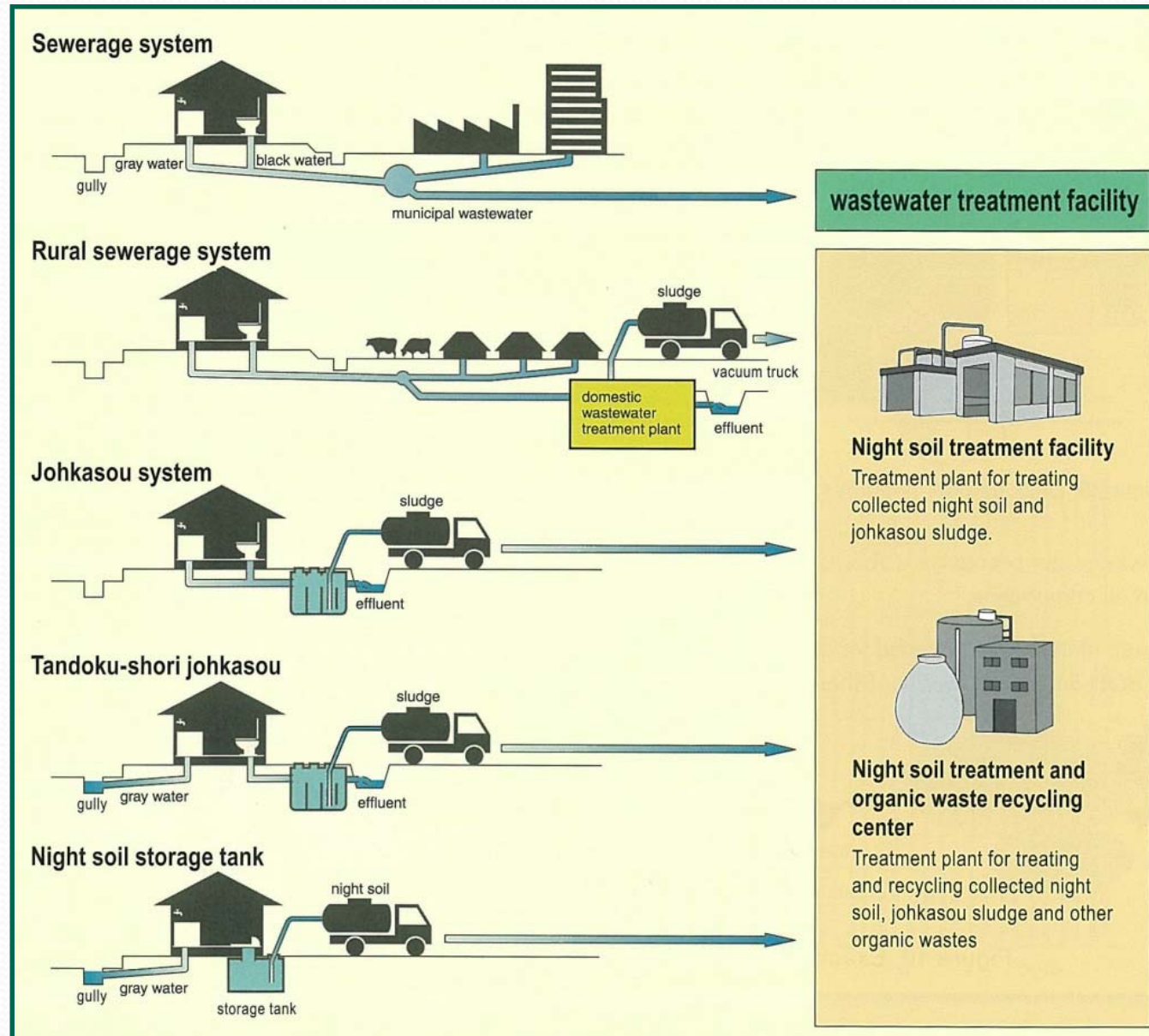
# Outline

1. Japanese Johkasou
2. Implementation of construction of wastewater treatment facilities in japan
3. Difficultly of change from existing Tandoku-shori Johkasou to new Gappei-shori Johkasou
4. Importance of maintenance of johkasou

# 1 . Japanese Johkasou



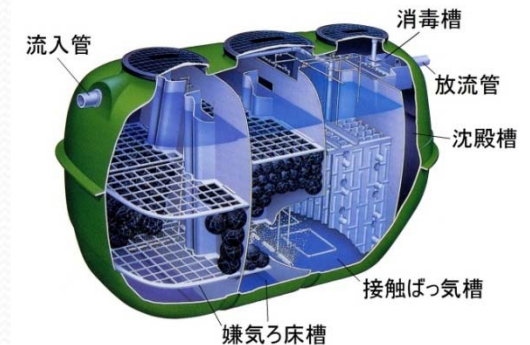
# NIGHT SOIL AND DOMESTIC WASTEWATER TREATMENT SYSTEMS IN JAPAN



# Advantages of johkasou

## High treatment performance

Johkasou can treat wastewater like sewage treatment plants (  $BOD \leq 20\text{mg/l}$ ,  $BOD$  removal rate  $\geq 90\%$ ) by the catabolism of microorganisms . There is nitrogen and/or phosphorous removal type.



## Little topographic and early realization of the effect

As small-scale johkasou can be installation in a small, space equivalent of a parking spot and be less represented for underground. It takes only a week for a typical installation. Moreover, when the johkasou begins functioning, its effect is evident immediately.

## Less vulnerable to earthquakes or other disasters

As it has not a complicated piping system, johkasou is less vulnerable to earthquakes and other disasters.

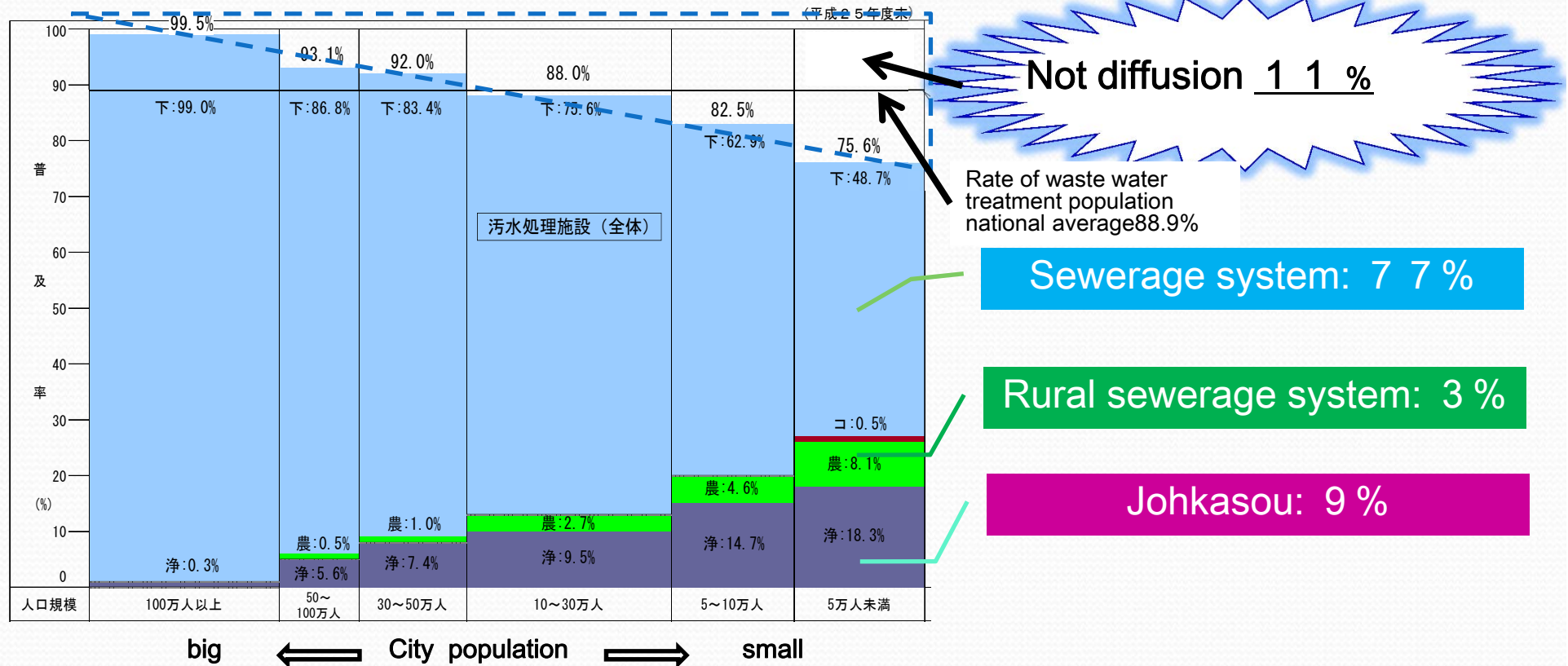
✕ According to the results of a survey on the Great East Japan Earthquake, completely destroyed johkasou is 3.8% ( researching of 1099 unites in over intensity 6 lower or hitting by tsunami area )





# The coverage of domestic Wastewater Treatment Facilities

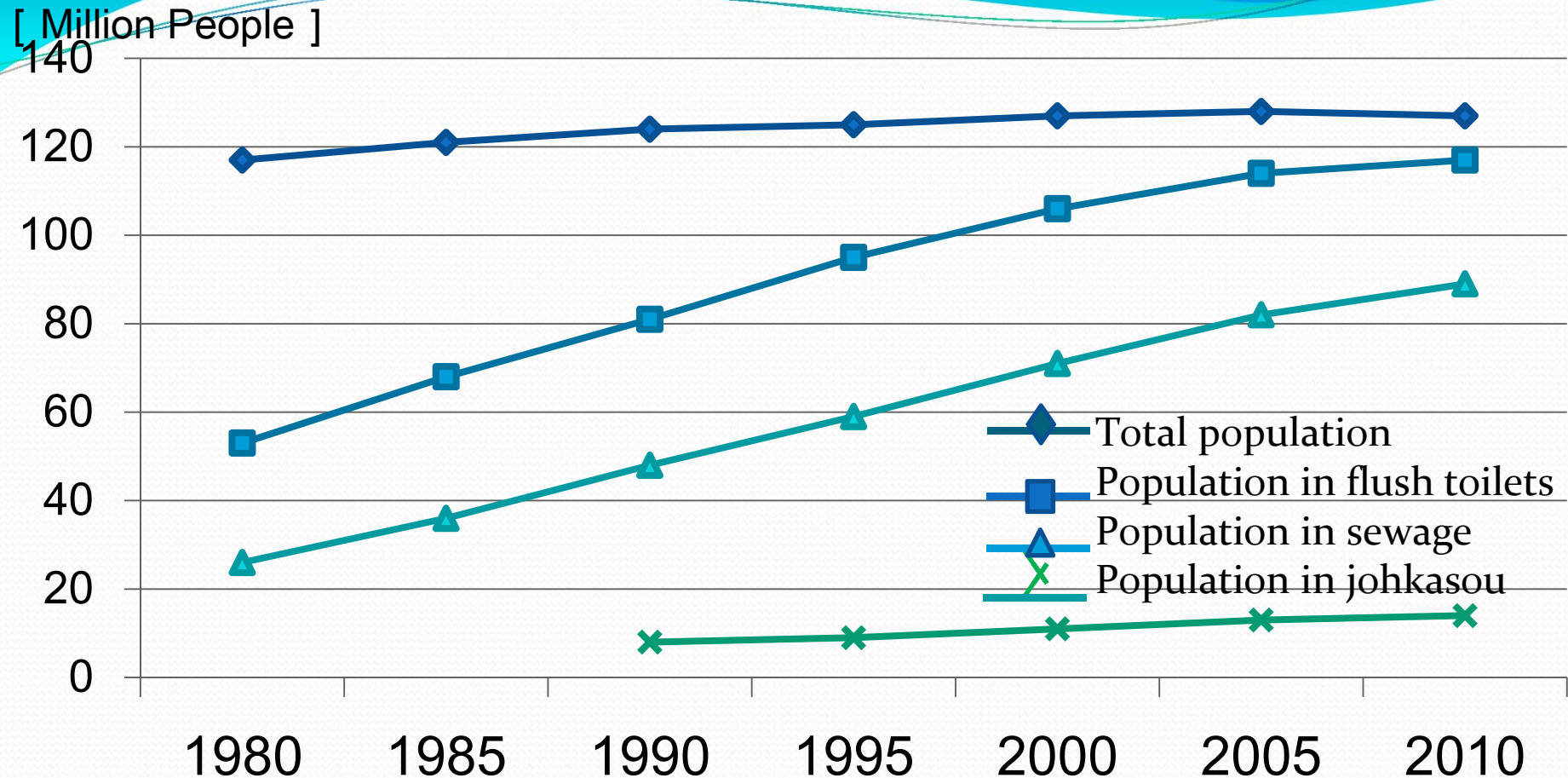
- The ratio of people using domestic Wastewater Treatment Facilities ( 2013 )



The ratio of Johkasou is high in municipalities with small population

## 2 . Implementation of construction of wastewater treatment facilities in japan

# Population trends for wastewater treatment



By 1940's, night soil was used for agriculture in Japan.

With the rapid economic growth, the pollution occurred by water contamination.

Sewerage Service Act was established for sound development and improvement of public health in urban areas.

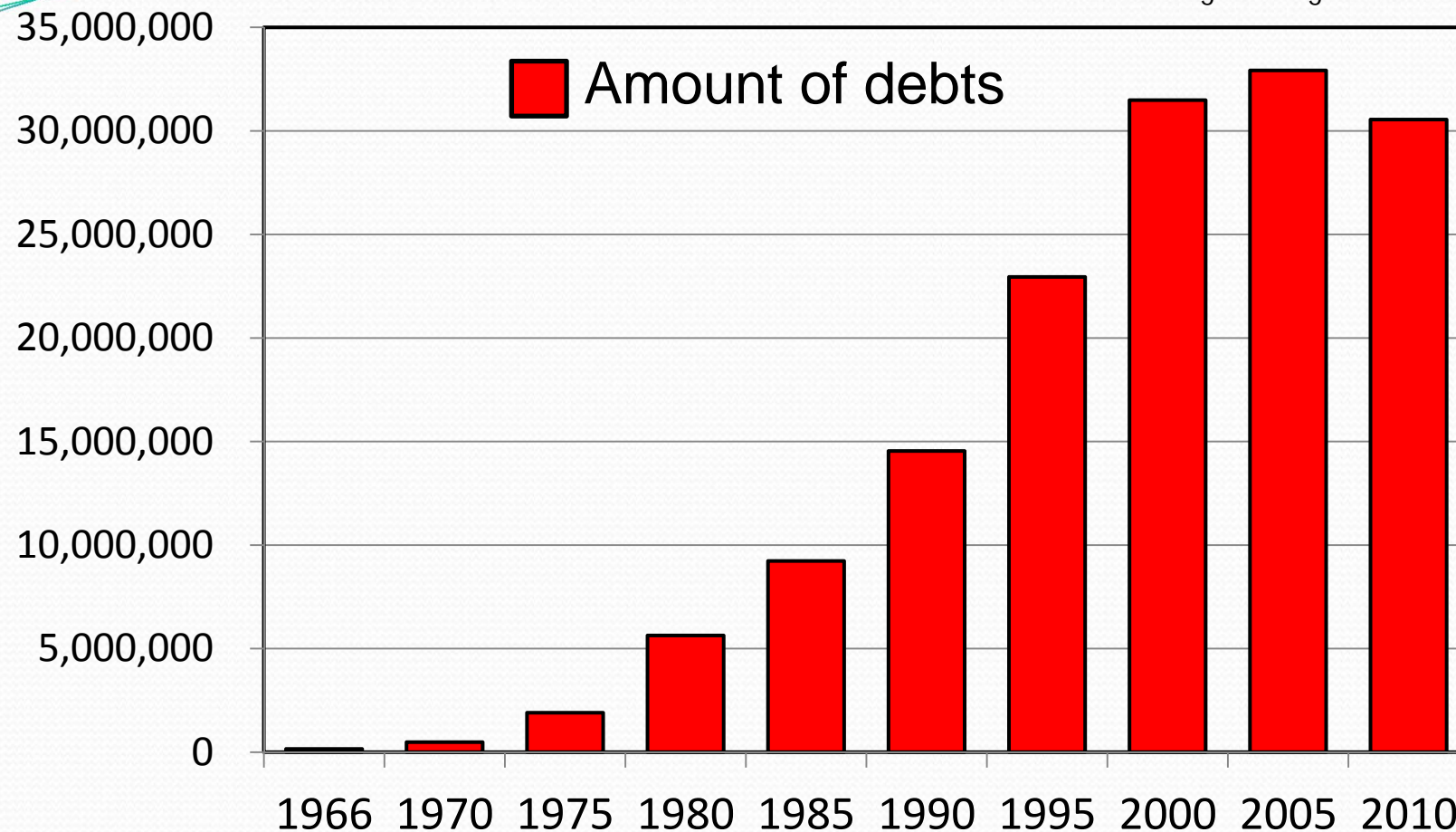
As a result population in flush toilets were included every year.



# Trends of sewage outstanding debts issue

[Million Yen]

Source: Handbook of sewerage management 2012



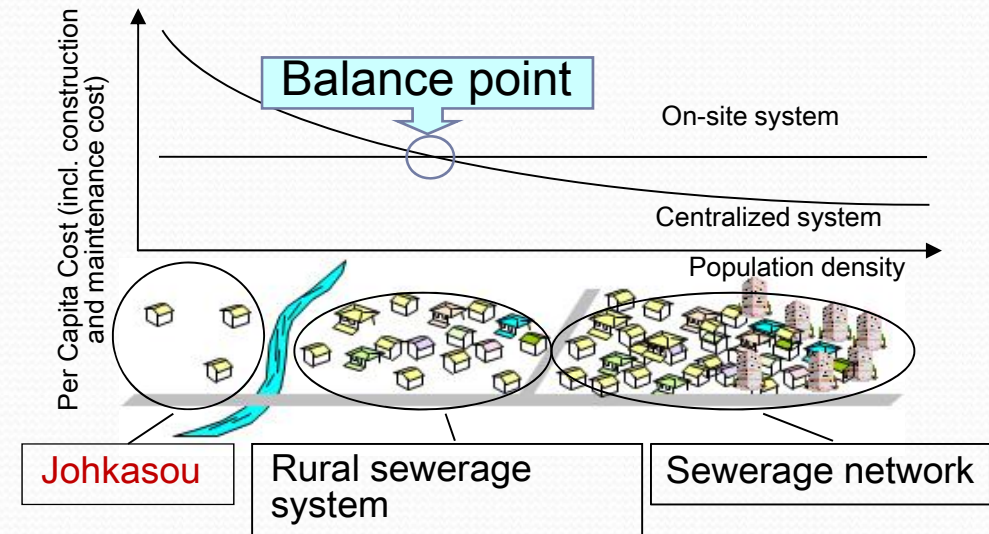
Sewage outstanding debts issue is increasing with implementation of sewage treatment facilities.

As sewage pipes have been getting older and renewal of piping system has already started, the cost will increase in the future.

# Manual for planning of wastewater treatment facilities in prefectures

## Cost comparison of centralized system and on-site system

- Manual for municipalities in charge of wastewater treatment (especially on-site system)



- This manual provides

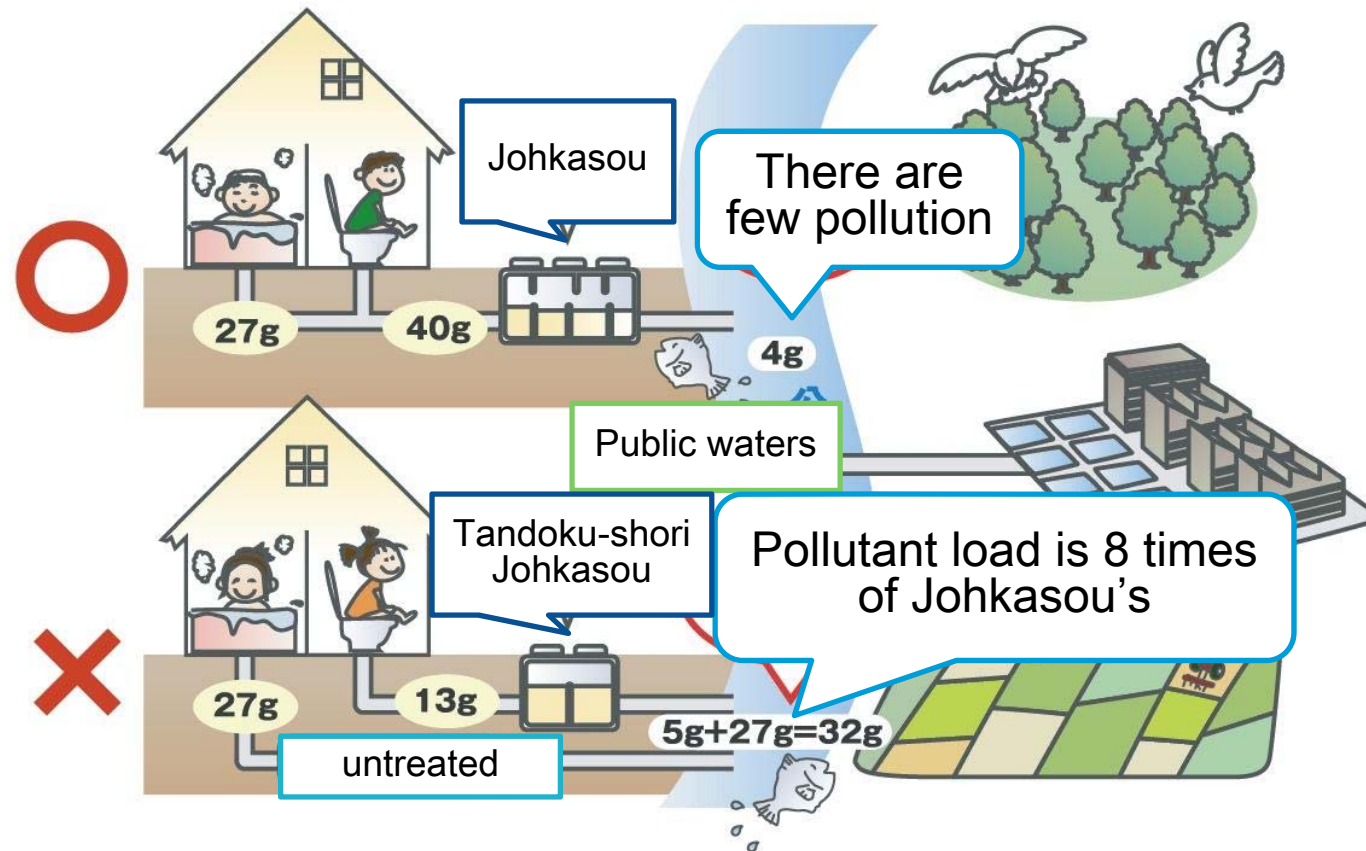
- **basic concept to create efficient and economic plan** of wastewater treatment systems
- the way to make a **rough estimate of constructing and O&M cost** of wastewater treatment systems
- **method for economic comparison** of various wastewater treatment systems
- Includes standard data such as construction cost, maintenance cost, useful life of the systems



### 3 . Difficulty of change from existing Tandoku-shori Johkasou to new Gappei-shori Johkasou

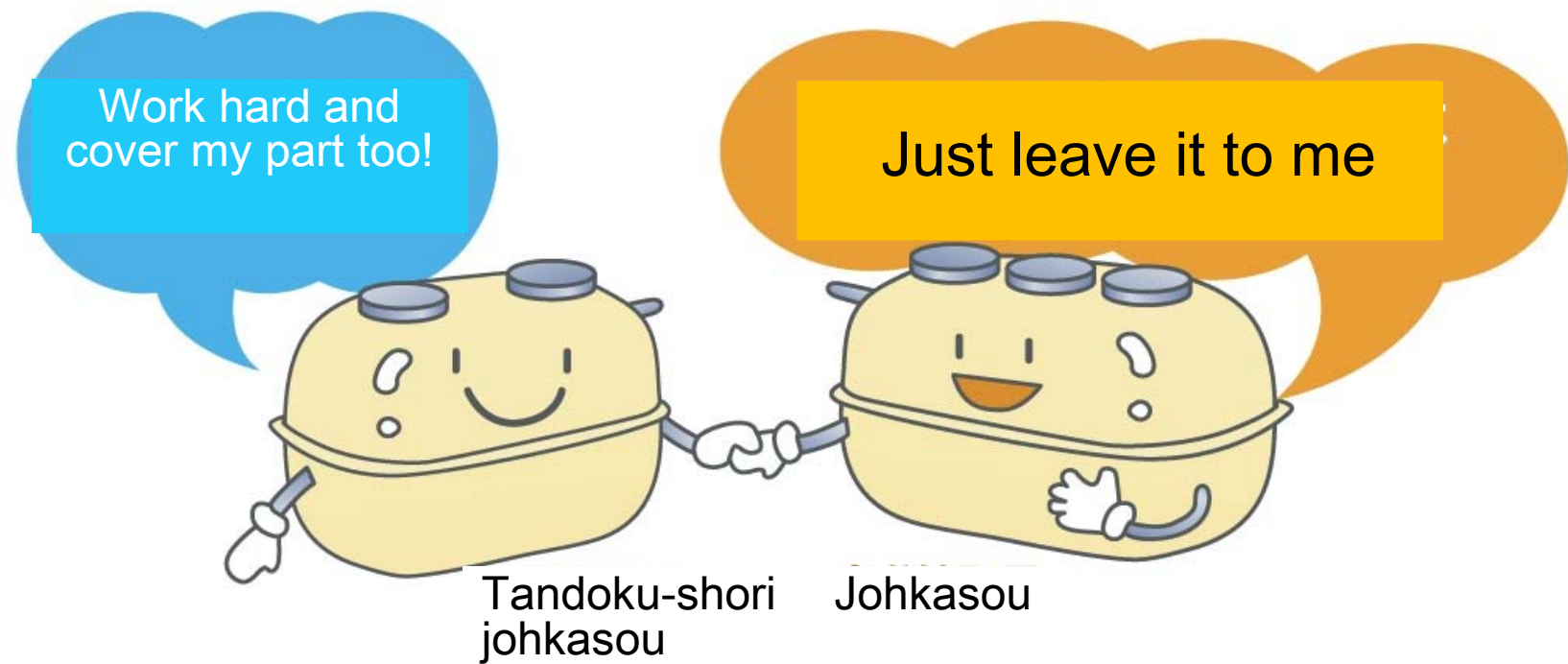


# Replacing Tandoku-shori Johkasou (black water only) By Johkasou (black and gray water)



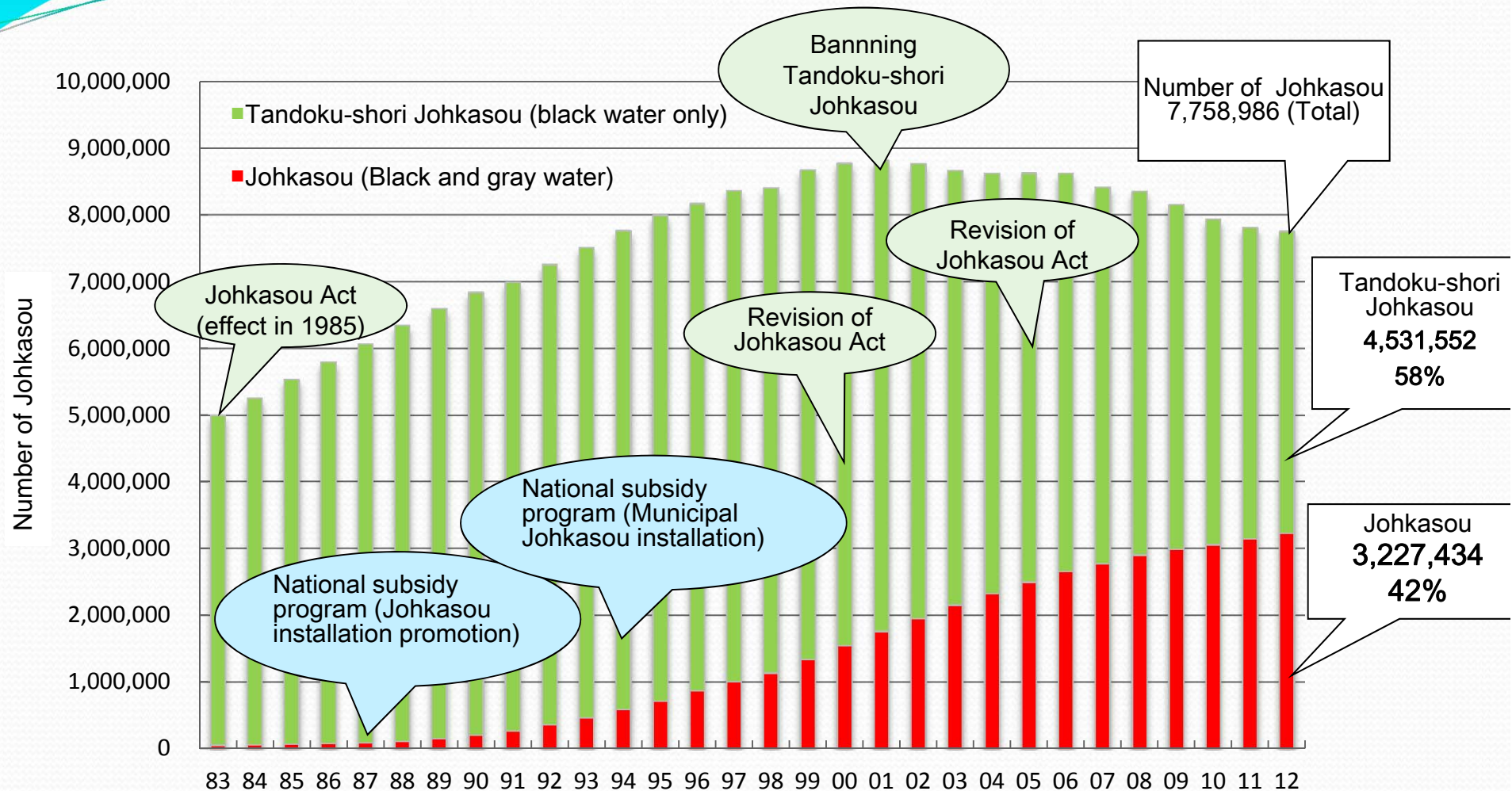
- Pollutant load from Tandoku-shori johkasou is 8 times of that of Gappei-shori Johkasou.
- There is no duty for house owner to replace Tandoku-shori Johkasou by Johkasou.

# New installations of Tandoku-shori johkasou were banned from 2001





# Number and trends of installed Johkasou

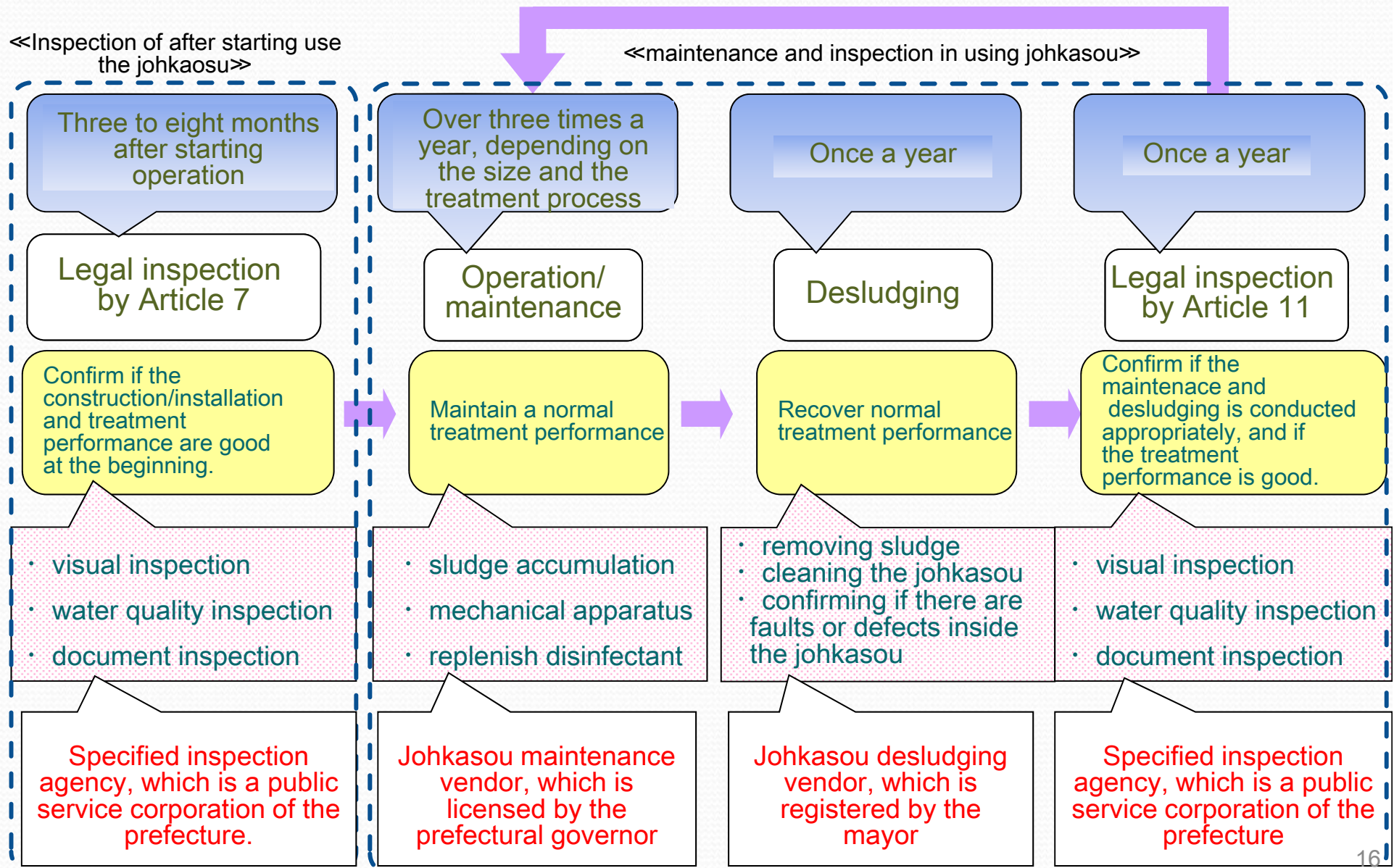


- To accommodate a flush toilet request, Tandoku-shori johkasou were constructed.
- Johkasou law amendment in 2000, new construction of Tandoku-shori johkasou is inhibition
- Tandoku-shori johkasou banning installation is remained about 4.5 million ( 60% )
- For long durable years, moving ahead changeover to gappei-syori johkasou is slowly.



## 4 . Importance of maintenance of johkasou

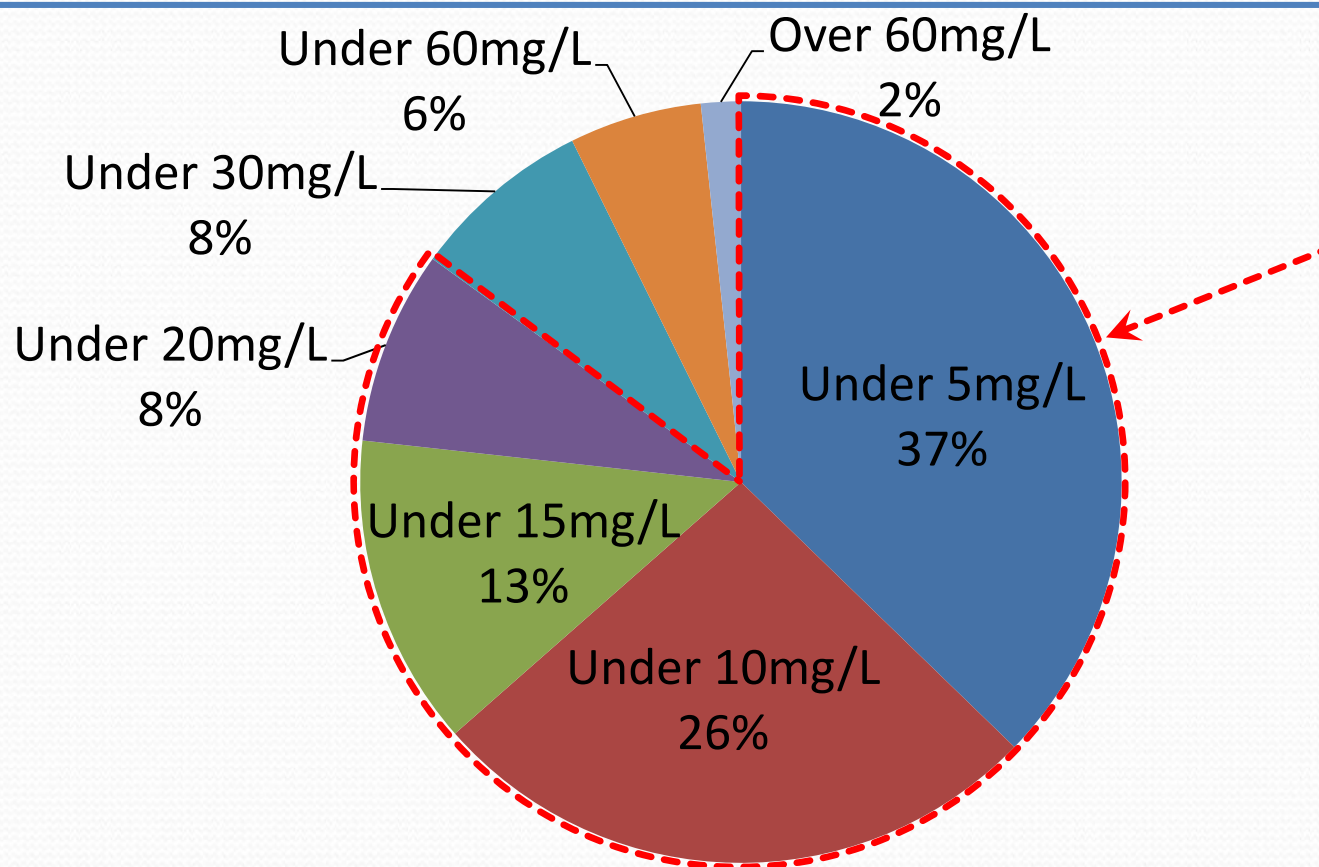
# Johkasou maintenance in Japan



# Effluent Water quality of Johkasou

For applicable maintenance doing,

- 838,349units(85.0%) of johkasou is BOD<20mg/l
- generality johkasou performance is equivalent to sewage



※By Johkasou administrative organization research in 2013

- Johkasou structural criterion is BOD>20mg/L, 986,643 units
- Inspection result of Legal inspection by Article 11 in 2013



## CONCLUSIONS

1. With the implementation of sewerage systems, the government has been faced with various problems, especially on the financial aspects.  
→ It is preferable to select centralized or decentralized treatment efficiently according to the local situations.
2. The progress of replacement of existing tandoku-shori johaksou by gappei-shori johkasou is a little .  
→ It is preferable to install gappei-shori johkasou rather than tandoku-shori johkasou when start to implementation of wastewater treatment facilities.
3. O&M is the key issue to make johkasou in normal condition.  
→ To ensure water quality of treated water, it is necessary to make a framework to confirm whether the O&M is conducted appropriately.



*Thank you for  
your attention!*