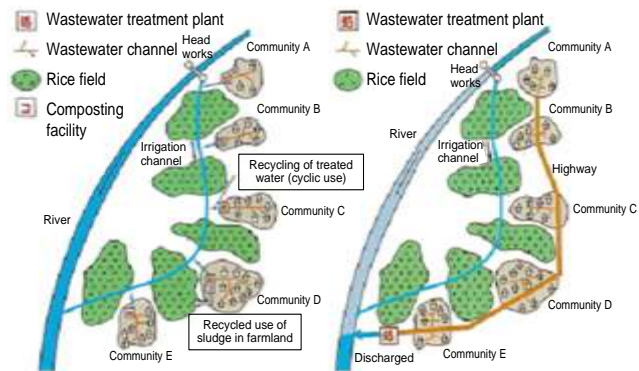


## Rural Sewage Treatment System in Japan



ICID 2015  
Montpellier, France  
Takanori Nagano

## Characteristics of Rural Areas in Japan

Unlike in urban areas, the density of dwelling is low in rural areas where villages are scattered among large, extensive farms. Domestic wastewater from rural communities and agricultural water from farmland are used repeatedly in the downstream areas. Rice fields, rivers, and water channels perform self-purification functions in this process.



Farm villages scattered in a rural area

## Background of introduction of rural sewage treatment plant

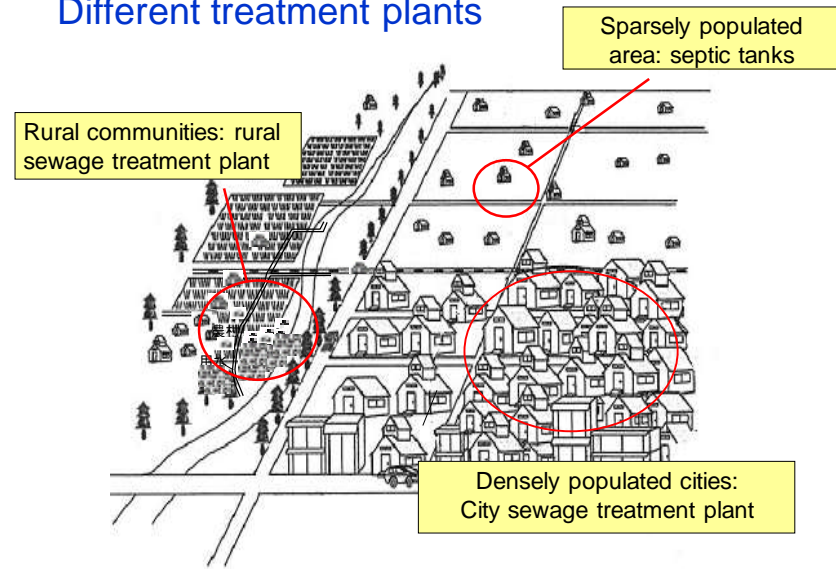
Traditionally in Japan's rural area, human excreta was fermented and turned into manure whereas gray water were released to water ways untreated.

As a result of Japan's rapid economic growth there was a drastic increase of non-farmers residence in rural communities

Due to the inflow of sewage (except brown water) exceeding the natural purification function, the water quality of agricultural water has deteriorated

There was a strong demand from rural communities for flush toilets which symbolized high living standard.

## Different treatment plants



## Sewage treatment plants under different jurisdiction

City sewage treatment plant: Ministry of Land, Infrastructure, Transport and Tourism

Rural sewage treatment plant: Ministry of Agriculture, Forestry, and Fisheries

Private sewage treatment plant: Ministry of Health, Labor and Welfare

5

## Rural Sewage Water Treatment Plant



Name: Yabe site (Oita Prefecture)

Type: Continuous extended aeration process

Capacity: 1,580 persons

6

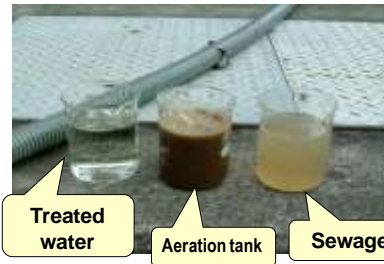
## Situation of Sewage Water Treatment



Externals of a treatment plant



Aeration in biological treatment tank



Treated water

Aeration tank

Sewage

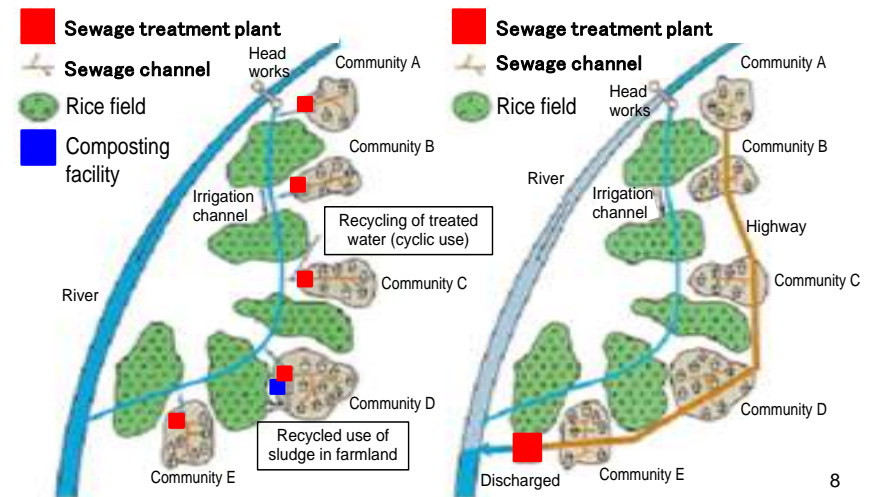


Appearance of the effluent

7

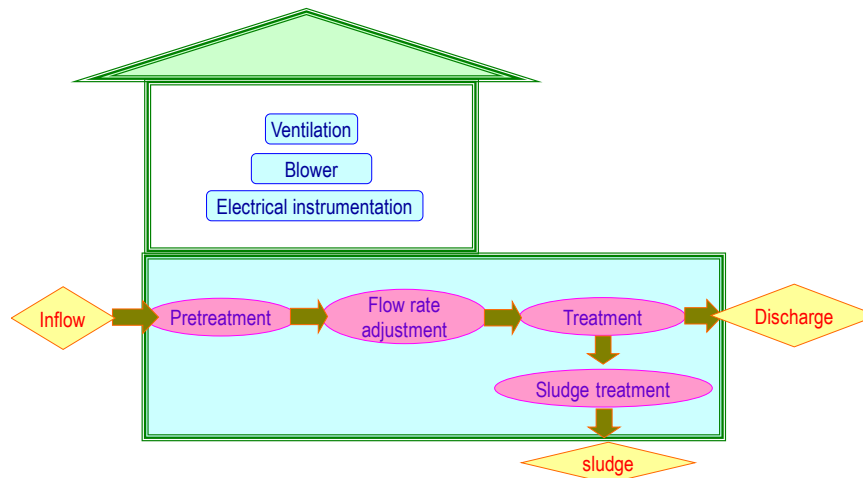
## Two Types of Sewage Treatment System

Small-scale distributed system    Large-scale concentrated system

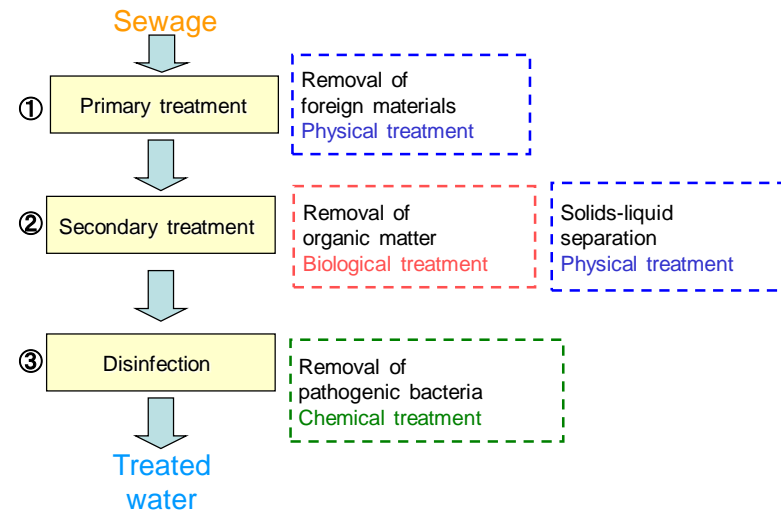


8

## Structure of a Rural Sewage Treatment Plant



## Process of Sewage Treatment



## Water treatment

Treated water is released from a rural community's wastewater treatment plant at a rate of **about 270 liters per person per day**. From a community of 1,000 residents, therefore, 200–300 m<sup>3</sup> of treated water is expected to be released each day.

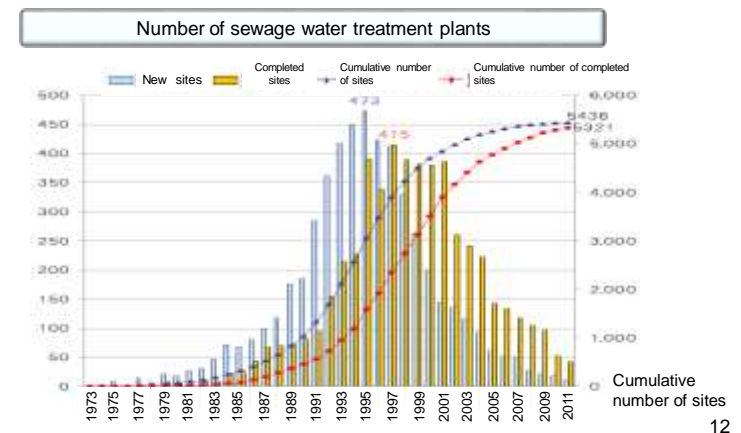
## Water quality

The wastewater treatment plants in typical rural communities have a treatment capacity to achieve a BOD less than 20 mg/L and a SS less than 50 mg/L. The actual treated water has a higher quality than this.

11

## Number of Rural Sewage Water Treatment Plants

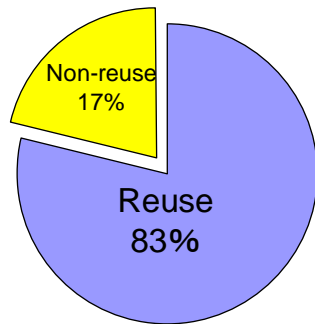
There are 5,100 sewage water treatment plants operating in Japan. There are 3,390,000 persons utilizing sewage water treatment plants.



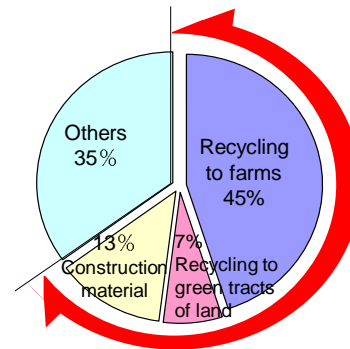
## Reuse of treated water

Total amount of treated water: 350,000,000 m<sup>3</sup>

The amount of reuse treated water:  
290,000,000 m<sup>3</sup>



## Recycling of Sludge



Rate of recycling of sludge:  
65% (850,000 m<sup>3</sup>)



**Thank you for listening**

Courtesy of slides and images

MAFF

The Japan Association of Rural Solutions for Environmental Conservation &  
Resource Recycling (JARUS)