Updates of Water Environment Governance in Japan

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1. Goals of water environment

Environmental Quality Standard(EQS) is an administrative goal, or regulation aimed at maintaining a desirable set of conditions. EQSs are designed contribute to the welfare of humankind and to ensure the healthy and cultural lifestyles of the present and future generations.

The goals are set forth in the Basic Environment Law (1993)

※Replaced from Basic law for environmental pollution control (1967)

- **Environmental Quality Standard (EQS)**
  - EQS for protection of human health
  - EQS for conservation of living environments

  EQS is set based on the "Effect on people" and "Effects on living environment (including aquatic life)" of each public waterbody

- **Effluent Quality Standards (EffQS) are set forth in Water Pollution Control Law since 1970**
  - Standards for the protection of human health
  - Standards for the conservation of the living environment

EffQS regulates wastewater from specified factories/establishments to achieve EQS and uniformly set in nationwide; For some specified establishes, provisional effluent standards are applied. Prefectures may set stricter effluent standards than the national EffQS, depending on the situation

1. Goals of water environment

EQS Parameters for Living environment

	Rivers	Lakes	Coastal waters
pH	6.0 - 8.5	6.0 - 8.5	7.0 - 8.3
BOD	≤ 1 - 10 mg/L	-	-
COD	-	≤ 1 - 8 mg/L	≤ 2 - 8 mg/L
SS	≤ 25 - 100 mg/L etc.	≤ 1 - 15 mg/L etc.	-
DO	≥ 2-7.5 mg/L	≥ 2-7.5 mg/L	≥ 2-7.5 mg/L
Bottom Layer DO	-	≥ 2.0-4.0 mg/L	≥ 2.0-4.0 mg/L
Escherichia coli count	≤ 20 - 1,000 CFU/100 mL	≤ 20 - 300 CFU/100 mL	≤ 300 CFU/100 mL
N-hexane extracts	-	-	Not detectable
Total nitrogen	-	≤ 0.1 - 1 mg/L	≤ 0.2 - 1 mg/L
Total phosphorous	-	≤ 0.005 - 0.1 mg/L	≤ 0.02 - 0.09 mg/L
Total zinc	≤ 0.03 mg/L	≤ 0.03 mg/L	≤ 0.01 - 0.02 mg/L
Nonyl phenol	≤ 0.0006～0.002mg/L	≤ 0.0006～0.002mg/L	≤ 0.0007～0.001mg/L
LAS	≤ 0.02～0.05mg/L	≤ 0.02～0.05mg/L	≤ 0.006～0.01mg/L

1. Goals of water environment

Classification of each waterbody is determined based on "intended use". EQS of each parameter is set based on the classification.

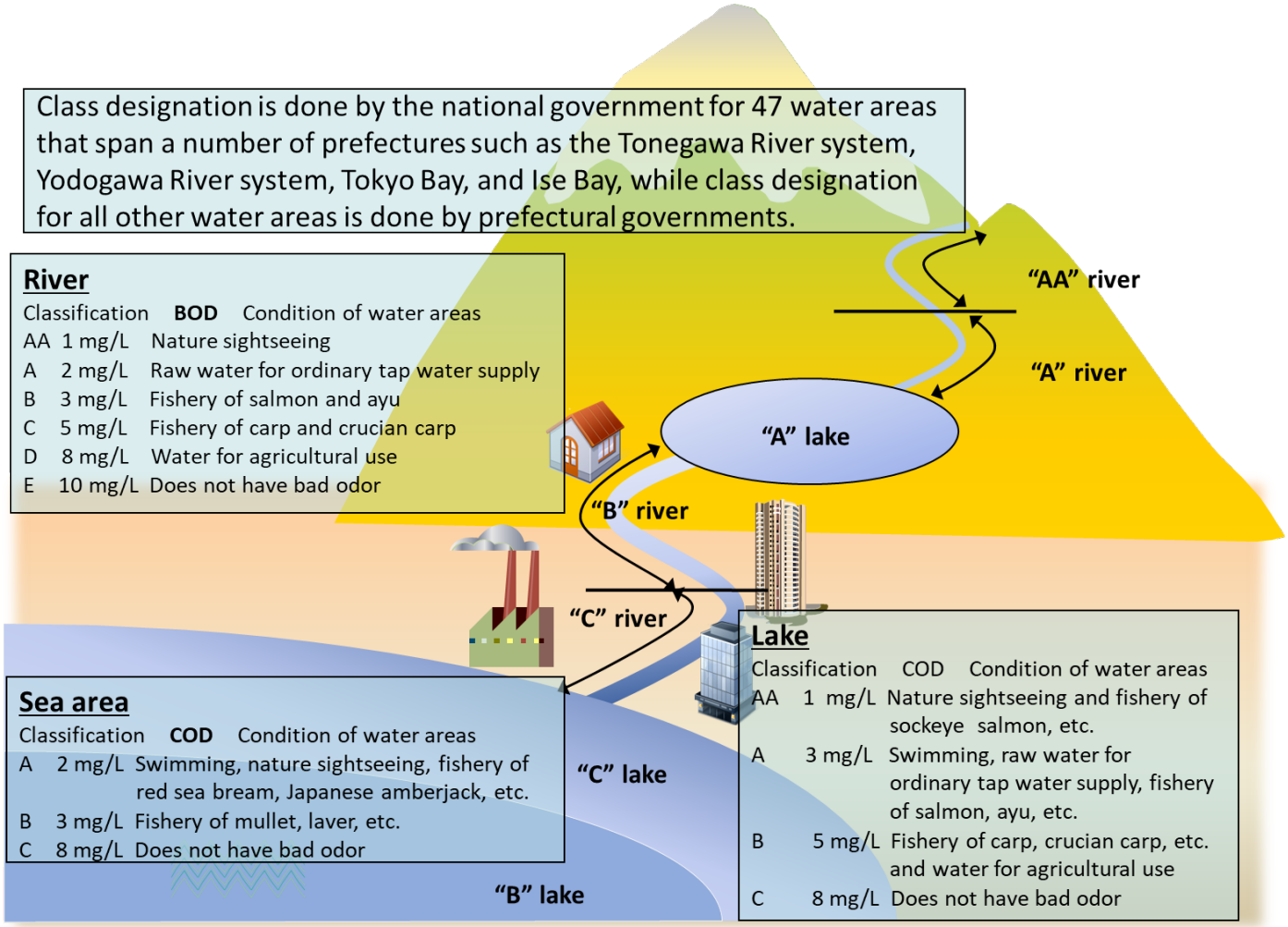


Image of class designation (by water use and area type)

2. Assess the status of water environment

Prefecture (subnational government)

◆**Formulation of water quality monitoring plan**

Formulated

- to coordinate with the Ministry of Land, Infrastructure and Transport and government ordinance city
- to effectively conduct continuous monitoring of water quality

Reporting results

Direction, notice, technical advice required for the continuous monitoring of water quality

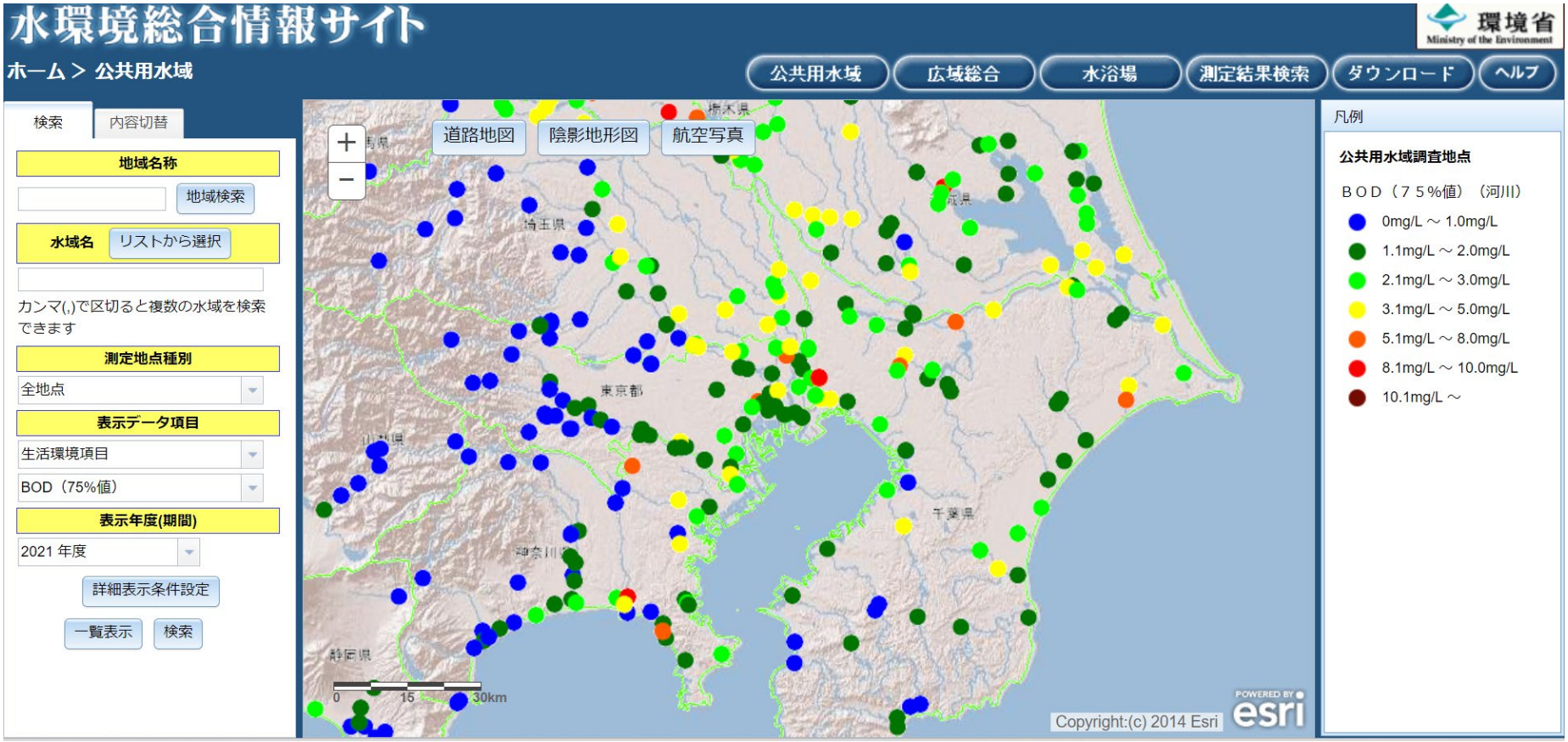
Ministry of the Environment

- Compiling nationwide WQ data
- assessing the status of the water environment
- reviewing existing policies

Revising existing policies including EQS

3. Identify pollution sources

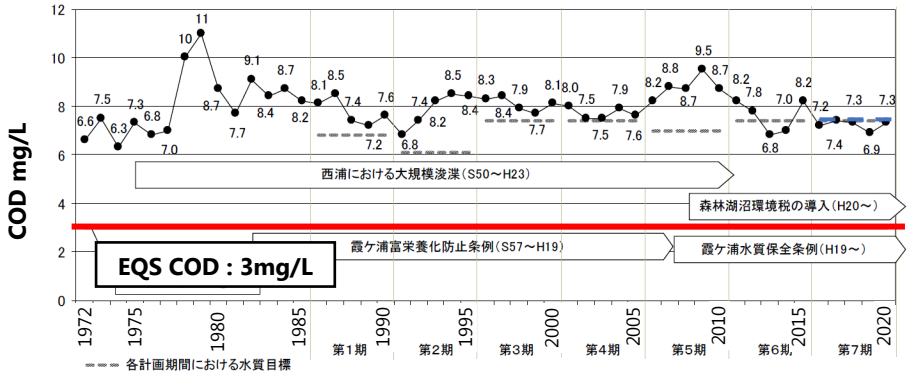
Examples of Officially Disclosed Data



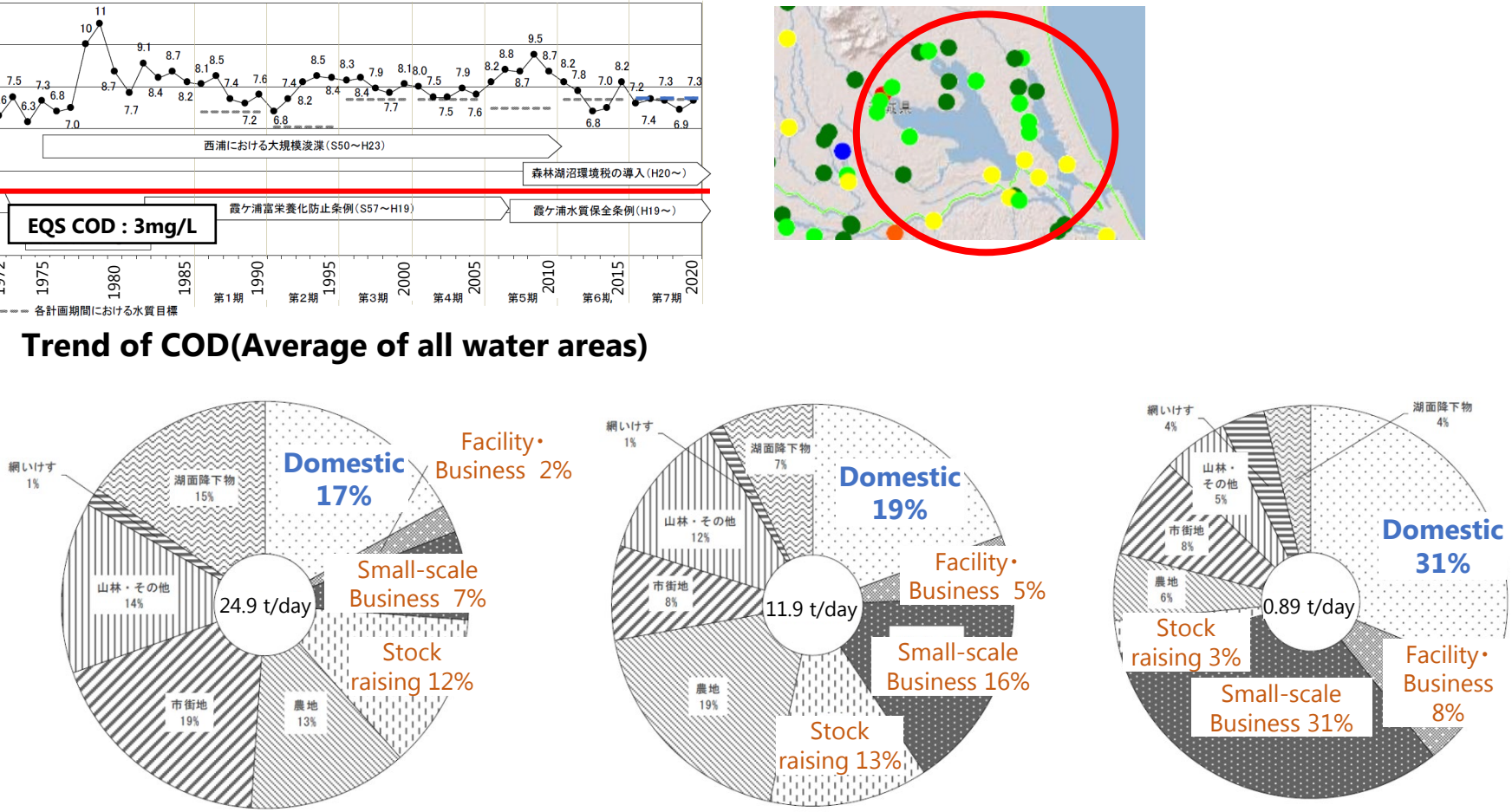
https://water-pub.env.go.jp/water-pub/mizu-site/mizu/kousui/dataMap.asp

3. Identify pollution sources

Analysis by the prefecture (case of Lake Ksumigaura)



Trend of COD(Average of all water areas)



2020FY Average of all water areas

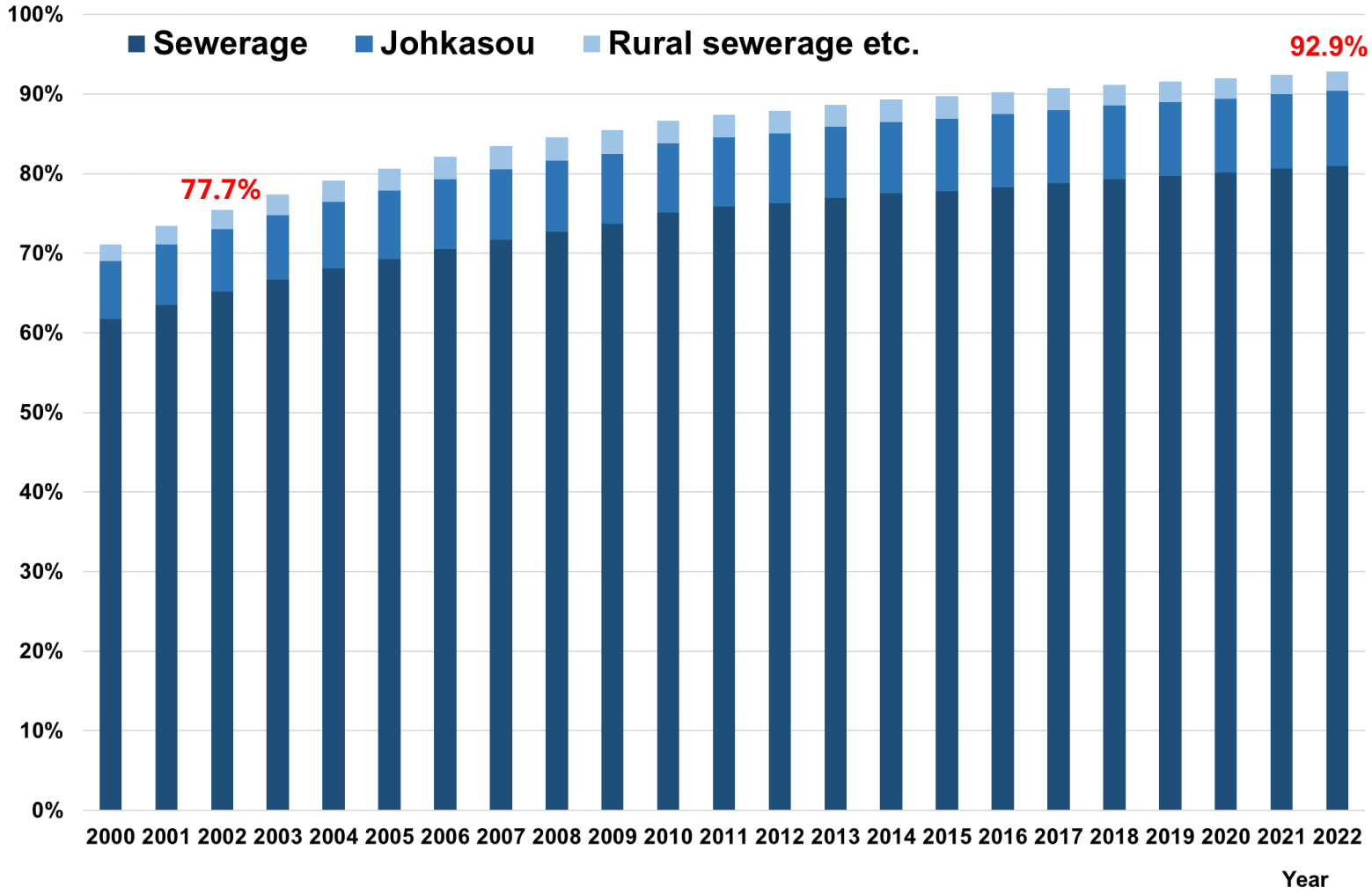
4. Implement measures to address issues

To address domestic wastewater problems,
following measures were implemented/strengthened at subnational levels

- Developing sewerage system
  - ✓ Revising the Sewerage Act by devolution of authority to subnational government in 1999
  - ✓ Clarification and renovation of structural standards for combined sewerage systems in 2003
  - ✓ Promoting advanced treatment system in 2005
- Promoting the installation of advanced Johkasou system
  - ✓ Revising the Johkasou Act to prohibit old type in 2001
- Enforcing proper management at night soil treatment facilities
- Treating untreated domestic wastewater at community wastewater facilities
- Raising awareness and responsibility of citizens (Local ordinance)

5. Evaluating outcomes and revising policies

Statistics of domestic wastewater management

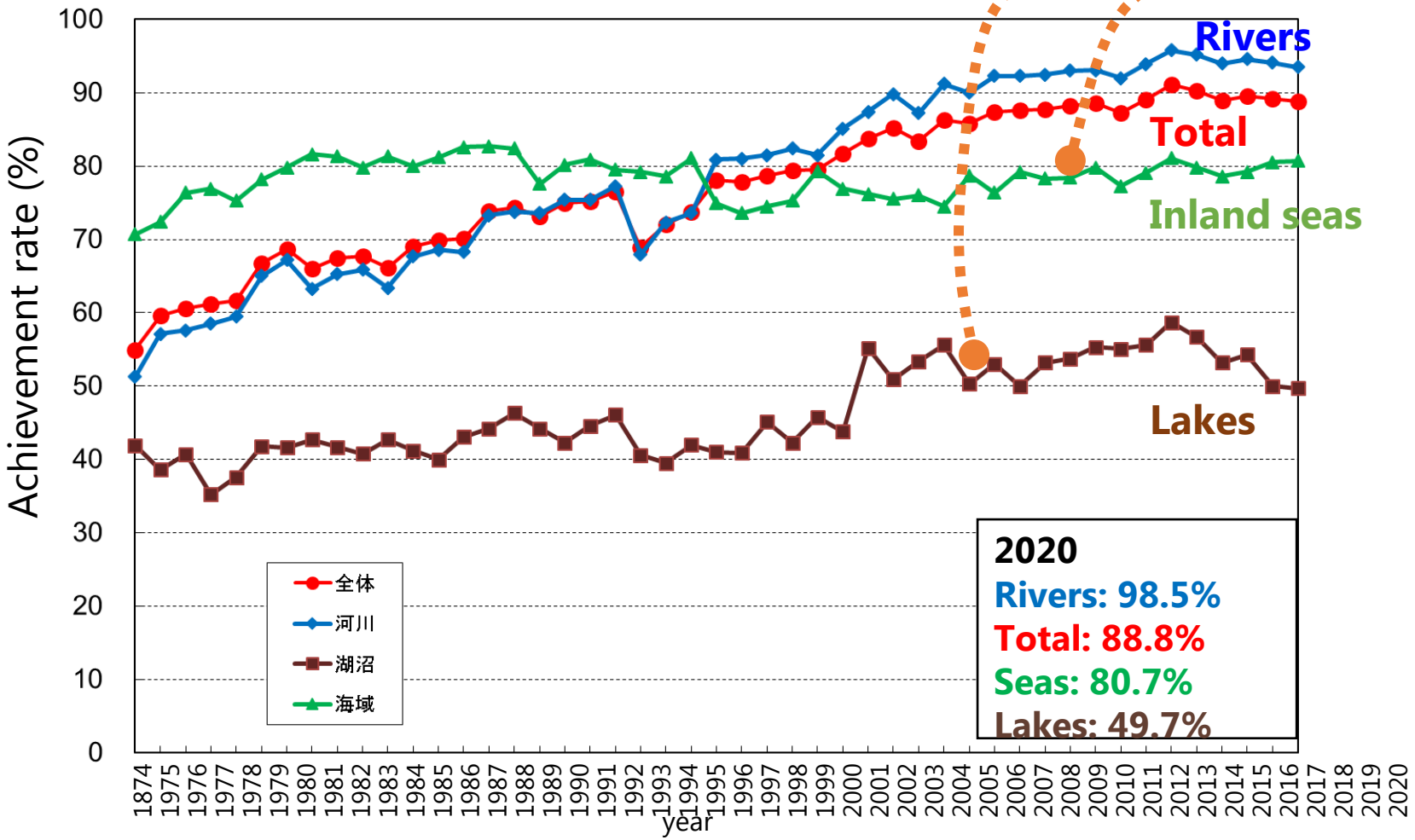


Ratio of people covered by domestic wastewater treatment system (2000 – 2022)

5. Evaluating outcomes and revising policies

Living Environment Items

Improvement tendency as a whole,
but still low achievement rate in enclosed water area (lakes and inland seas).

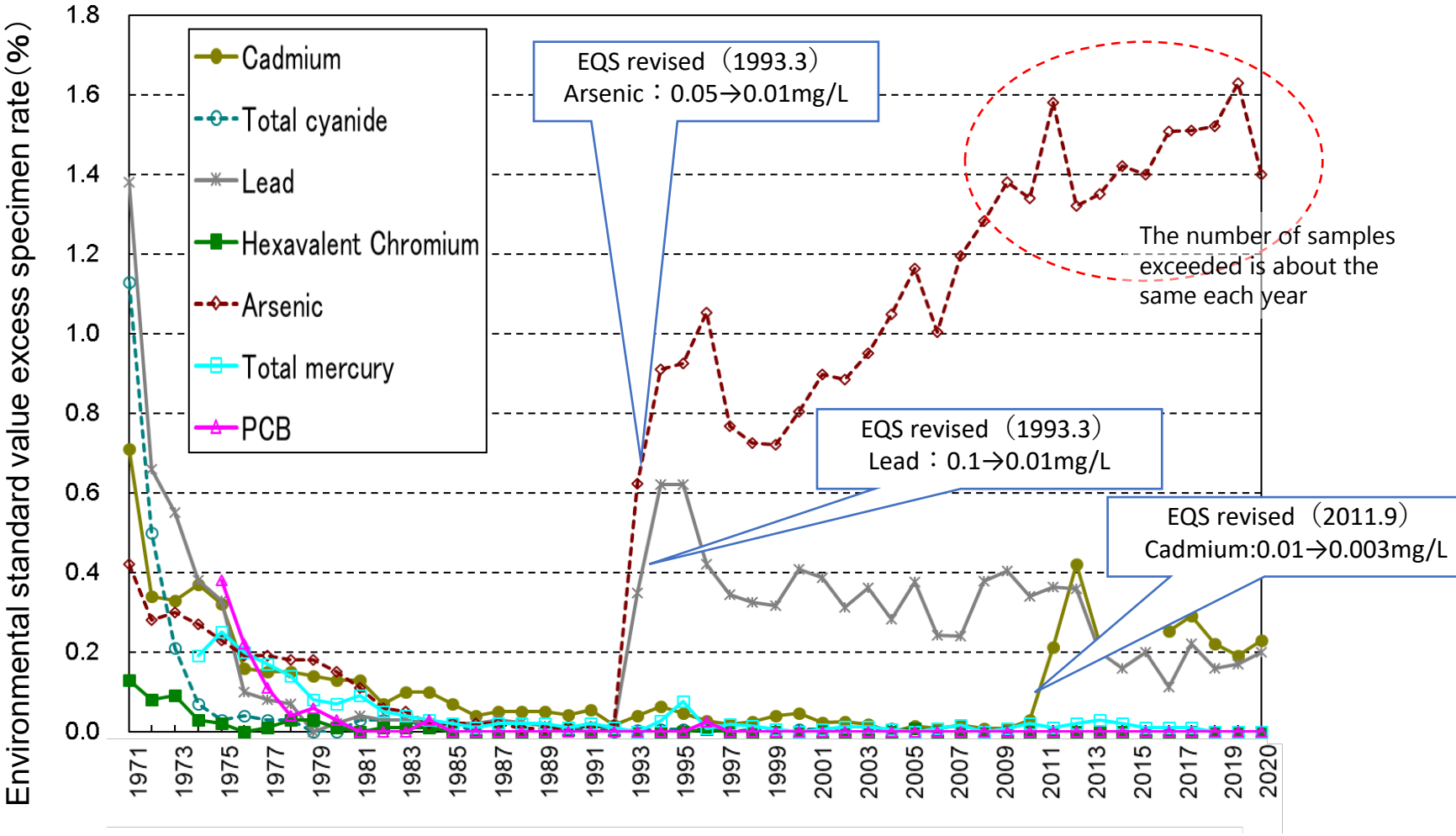


Trends in achieving EQS (BOD and COD)

5. Evaluating outcomes and revising policies

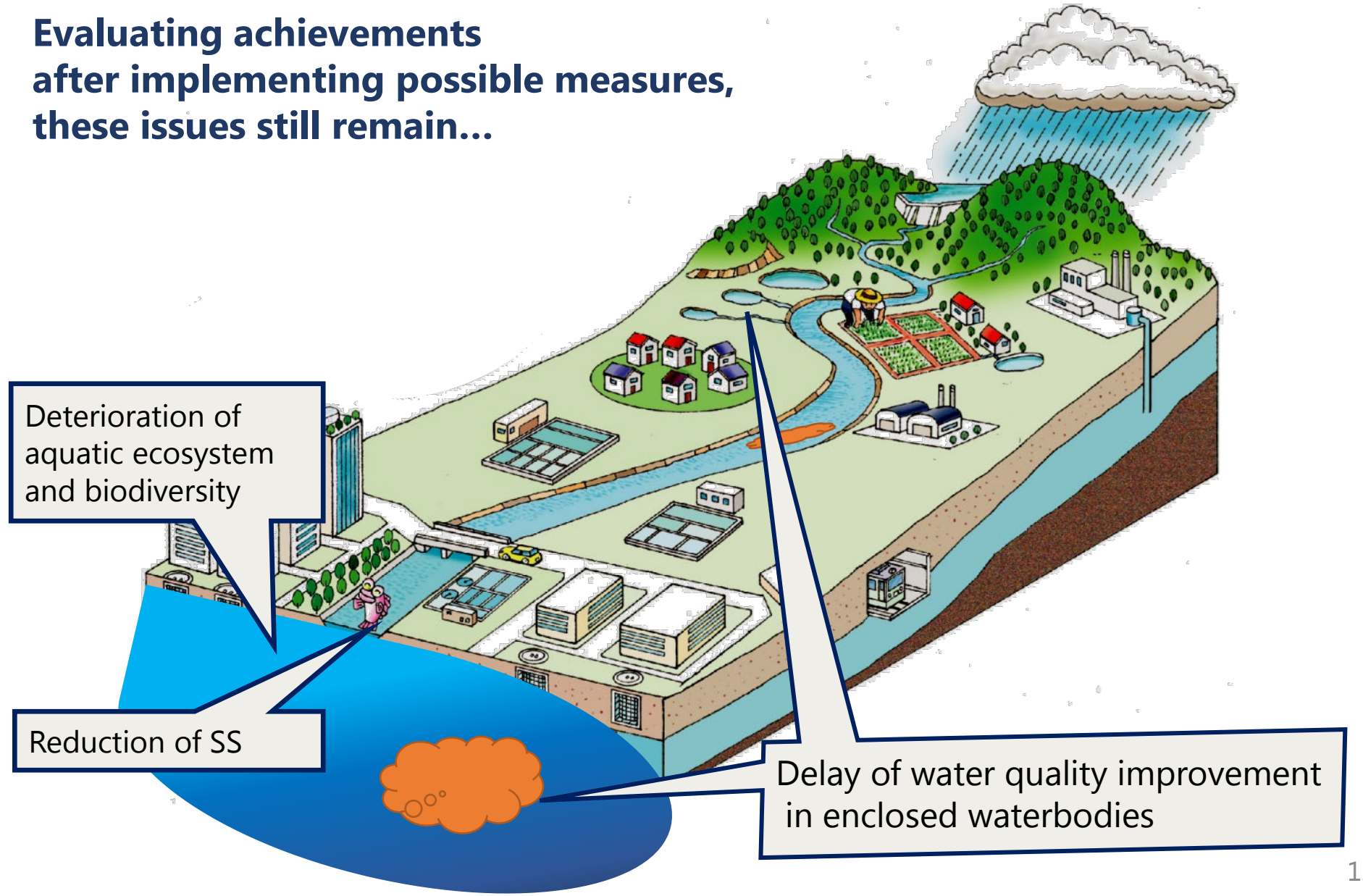
Health Items

Achieved Environmental standard almost over the country.



5. Evaluating outcomes and revising policies

Evaluating achievements after implementing possible measures, these issues still remain…



5. Evaluating outcomes and revising policies

- **Enacting "Act on Special Measures" to protect particular waterbody**
  Laws specially enacted
  for a limited period of time / for a specific and intensive purpose
  - ✓ Act on special measures concerning conservation of the Environment of the Seto Inland Sea in 1973 (total pollutant load reduction)
  - ✓ Act on special measures concerning conservation of Lake Water Quality in 1984

- **Adapting to new methods & technologies**
  - ✓ Seasonal operation at sewage treatment plants to adjust nutrient discharge to restore coastal habitats
  - ✓ Putting more efforts to promote the conversion of old-type Johkasou to new-type Johkasou and strengthening supports to municipalities

5. Evaluating outcomes and revising policies

Amending existing laws (revising EQS/ EffQS)

Revising WQ parameters

Adding **Nonyphenol** to EQS in 2012, **LAS** in 2013, **Bottom layer DO** in 2016

Hexavalent chromium compounds

Revised EQS(effective April 2022)

0.05 mg/L ⇒ 0.02mg/L

- The tolerable daily intake (TDI) was evaluated 1.1 µg/kg bw/day by the Food Safety Commission of the Cabinet Office in Japan.
- The Ministry of Health, Labour and Welfare Japan (MHLW) revised the drinking water quality standard value from 0.05 mg/L to 0.02 mg/L or low .

Revised EffQS

0.5mg/L ⇒ 0.2mg/L

scheduled to effective April 2024

Escherichia coli number

Revised EQS(effective April 2022)

Coliform group number
⇒ Escherichia coli number

- At the time of this standard establishment in 1971, Coliform group number was used because it was not possible to measure Escherichia coli due to limitations in analytical technology (culture technology), etc.
- EQS was revised because methods for measuring Escherichia coli are now established.

Revised EffQS

Coliform group number :
Daily mean value 3,000/cm³
⇒ Escherichia coli number: 800CFU/mL
scheduled to effective April 2025

6. Challenges and future plans

Challenges

- Raising the achievement rate of EQS in closed waterbodies
- Restoration of habitats and ecosystem services in closed waterbodies (Lake and coast)
- Water quality control to improve productivity at coastal areas
- Increase in water temperature in lakes (affecting bottom DO)

Future plans

- Effectively conserve healthy ecosystems at least 30% by 2030
- Conservation and utilization of a good water environment that also contributes to biodiversity

Thank you for your attention