
Survey to review the calculation standards for domestic wastewater treatment plants in the rest-areas of expressway

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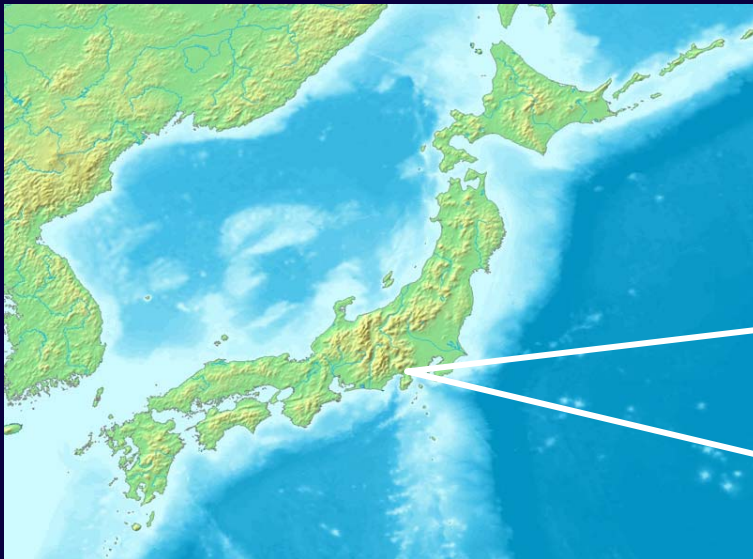
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Introduction

- Over 800 rest-areas are located on more than 8,000km in the Japanese expressways
- Many of these rest-areas are in mountainous areas, requiring around 400 of them to have **domestic wastewater treatment plants**



Rest-area of Japanese expressway

Purpose of this research

Changes in the situation of surrounding rest-areas

(1) Diversification of rest-areas

(2) Dissemination of water-saving type toilets

There is expected to be some **deviation between calculations based on current standards and actual conditions**

The purpose of this research is **reviewing current standards** to ensure scale calculation standards for domestic wastewater treatment plants correspond to the actual conditions of rest-areas by **fact-finding survey**

Selection of survey locations

5 PA (without shops)

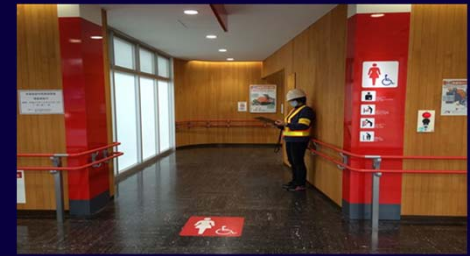


Survey items

(1) Fact-finding survey on parking lot



(2) Fact-finding survey on number of facility users by type of users



(3) Survey of wastewater amounts by type of use

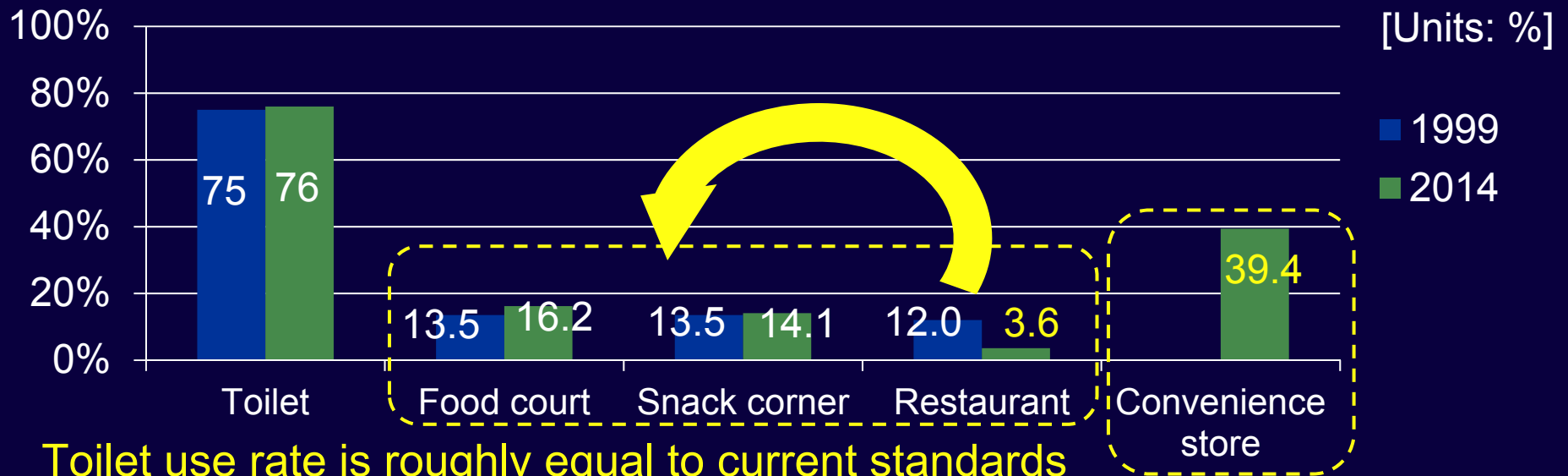


(4) Survey of pollutant load (wastewater quality) by type of use



(5) Survey of toilet turnover rate

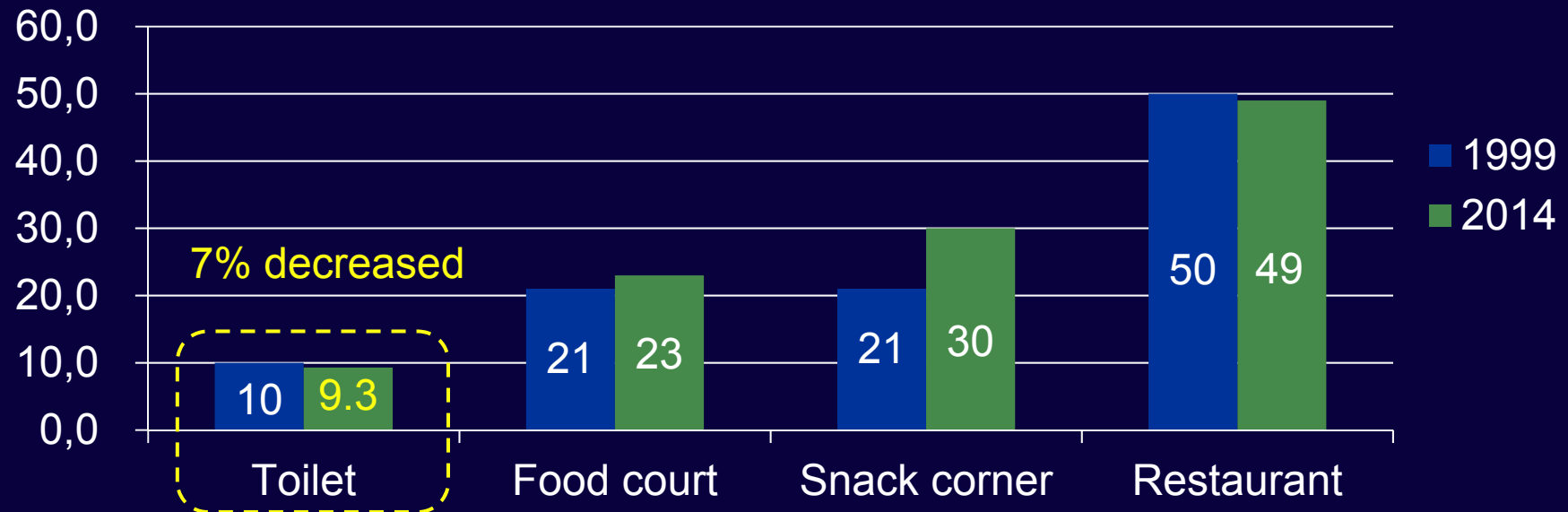
Use rates of toilets and commercial facilities



- Toilet use rate is roughly equal to current standards
- Use rates of food court and snack corner increased, restaurant use rate decreased
- Convenience store use rate is not covered in the current standards, but a high use rate is confirmed

Wastewater intensity for each facility

[Units: L/person]



- Values have decreased for toilets due to the adoption of water-saving type toilets
- Values have increased for commercial facilities due to cooking on the spots

Conclusion

- A fact-finding survey clarified **behavioral characteristics and drainage characteristics of users** at rest-areas
- Water use amounts have **decreased for toilets** due to the adoption of water-saving type toilets
- Water use amounts have **increased for commercial facilities** due to the diversification of rest-areas
- The survey showed that the size of domestic wastewater treatment plants could be **reduced from the existing standard**, and contributed to establish a calculation standard in conformity with how to be used.