Give New Life to Water

Japan Sewage Works Agency

Established in 1972

About Japan

JS' Policy

Japan Sewage Works Agency (JS), as your solution partner, will promote forming the foundations of technology, human resources, and information in the wastewater businesses and contribute to creating a healthy water environment, a safe community, and a sustainable society.

JS' Mission

- Japan Sewage Works Agency (JS) is a particular public institution established by 47 local governments' capital subscription. We have contributed to municipal needs and benefits, which are sewerage administrators.
- JS is a professional group of sewerage management. We have tackled facilities construction, O&M, technical support, training, R&D, and global assistance.

Message from the president

Yasuhiro Morioka
President

Japan Sewage Works Agency (JS) has civil, architectural, mechanical, electric, and water quality engineering and business management experts to support municipalities with its nationwide organization system.

JS having its 50th anniversary in November 2022 since its establishment, has contributed to the sewerage system development by involving in constructing 70% of wastewater treatment facilities in Japan during this half-century. JS will support the life cycle of the sewerage projects through its technical power, knowledge, and experience.

Issues and needs that sewerage faces are getting more varied than ever. JS will fully support municipalities as a trusted solution partner and contribute to social development by leading the sewerage business revolution and creating a universal foundation.

Sewage Works Agency (JS)

Name	Japan Sewage Works Agency (JS)
History	Established in 1972
Business	Construction, O&M, and technical support of wastewater treatment facilities
Operating cost	234.1 billion yen
Capital	1,275.1 million yen (equally founded by 47 prefectures)
Based law	Japan Sewage Works Agency Act
Jurisdiction	Ministry of Land, Infrastructure, Transport and Tourism
Major bases	Head office (Bunkyo city, Tokyo), Training center (Toda city, Saitama), 2 Design centers, 7 Regional offices
Board of trustees	15 (4 governors, 6 mayors, 2 town/village mayors, and 3 academic experts)
Staff	750 (200 administrative staff and 550 technical staff)
Achievements	1,500 WWTPs (70% in Japan)
	990 Pumping stations
	280 Sewers
	100 technical standards
	130 Patents/utility models
	Trained 85,000 engineers (As of March 2023)

For the decarbonization

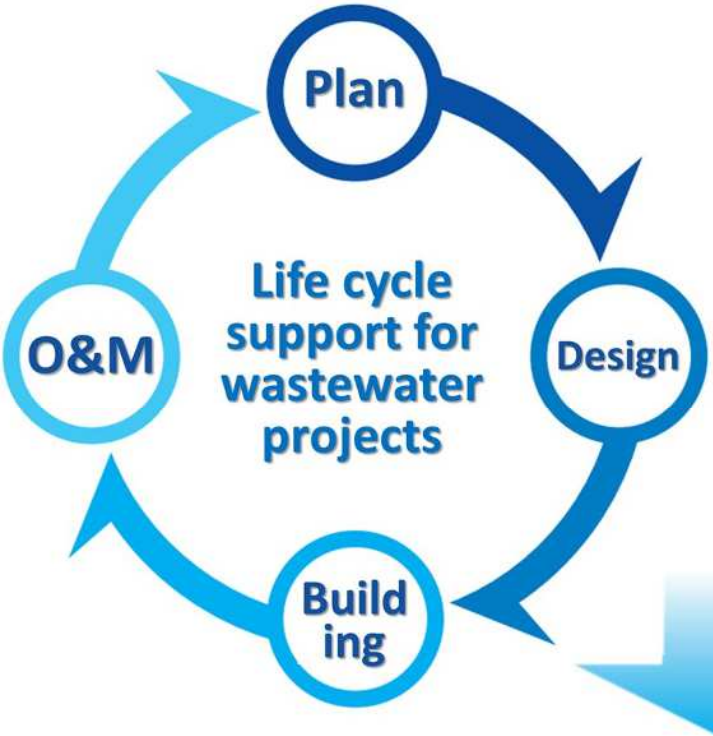
JS will promote decarbonizing technology and practical application and achieve decarbonization in its business for the 2030 goal of achieving carbon neutrality in 2050.

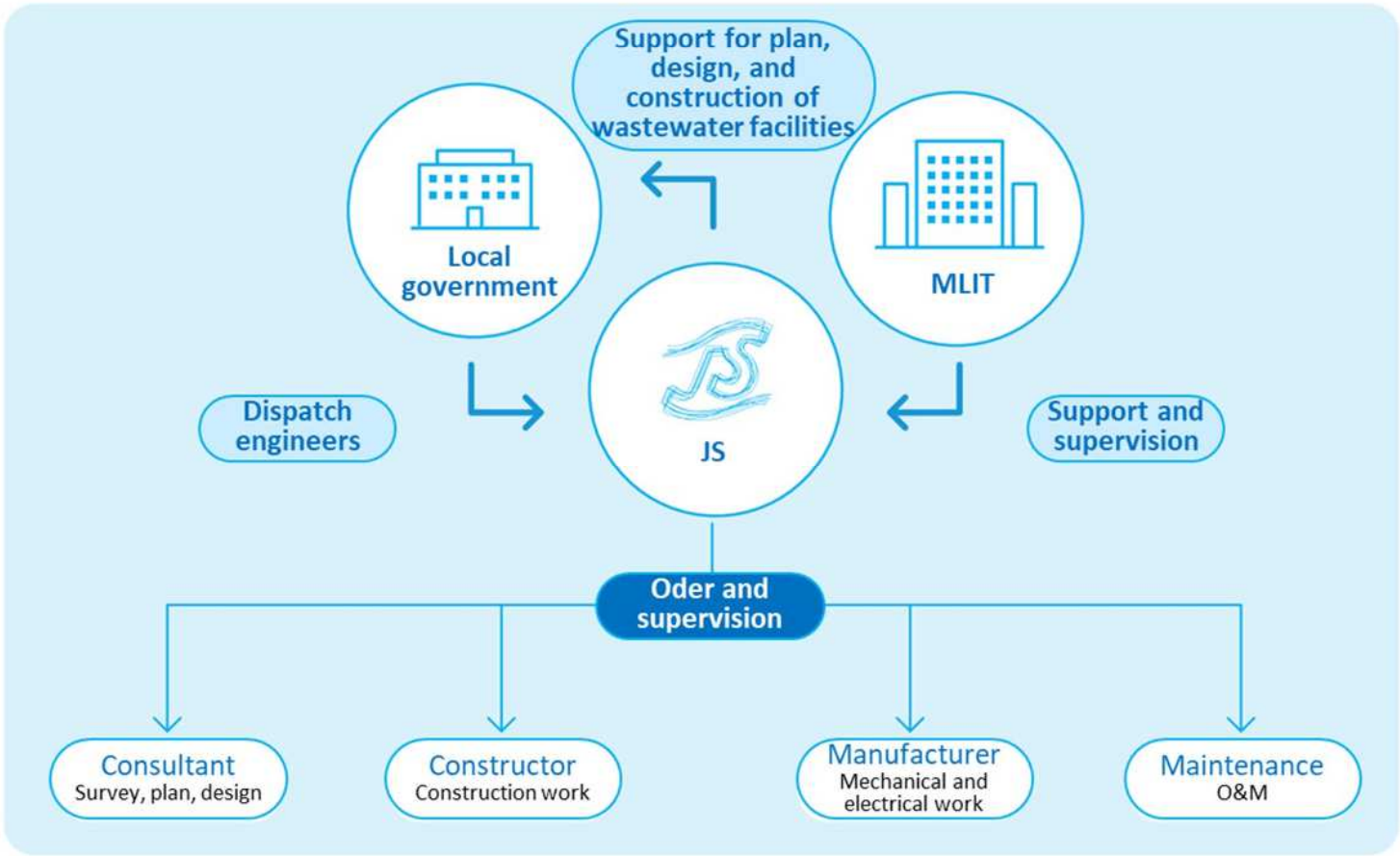
SUSTAINABLE DEVELOPMENT GOALS

JS will contribute to achieving SDG by promoting the creation of a sustainable society through the sewerage projects as a municipal solution partner.

JS supports the municipal waste from planning, design,

JS implements wastewater projects by entrusting local governments who are co-founders of the Japan Sewage Works Agency





Comprehensively support local governments as a wastewater solution partner

Actively lead business as an

water projects for their lifecycles construction, and O&M

JS is a professional group supporting and implementing wastewater projects, conducting R&D, criteria development, and training wastewater engineers.

POINT

The 6th Mid-term Management Plan 2022-26

JS has developed its Mid-term Management Plan as its top-level policy since 2003.

In 2022, the second year of the 6th plan, JS relentlessly strives to uphold our commitment to our 6th Mid-term Management Plan, actively assuming the following three roles;

- Solution partner
- Innovator
- Plat-former

JS will do its best to support, lead, and contribute to the lifecycle of municipal sewerage projects with its entire staff.

a wastewater transformation innovator

Contribute to social development by creating a public infrastructure as a wastewater platformer

Comprehensive support local governments as a wastewater solution partner

Various municipal needs and issues

- Population decline
- Aging facilities
- Decrease in skilled engineer
- Decarbonization
- Harsh financial situation
- Frequent natural disasters
- Function secure at disasters
- Digital transformation

JS supports wastewater projects for their continuity and evolution

JS's business based on the 6th Mid-term Management Plan

1 Retrofit

- Efficient and systematic support
- Energy-saving and downsizing
- Cost reduction by new technology and ICT

2 Earthquake & tsunami control

- Seismic diagnosis
- Enhance the existing facilities against earthquake and tsunami

3 Inundation control

- Inundation maps
- Stormwater pump stations
- Join the watershed flood control councils
- Integrated stormwater management plan

4 Support at disasters

- Prompt and consistent assistance
- Training for support workers
- Develop and share the existing facilities' database

5 Management support

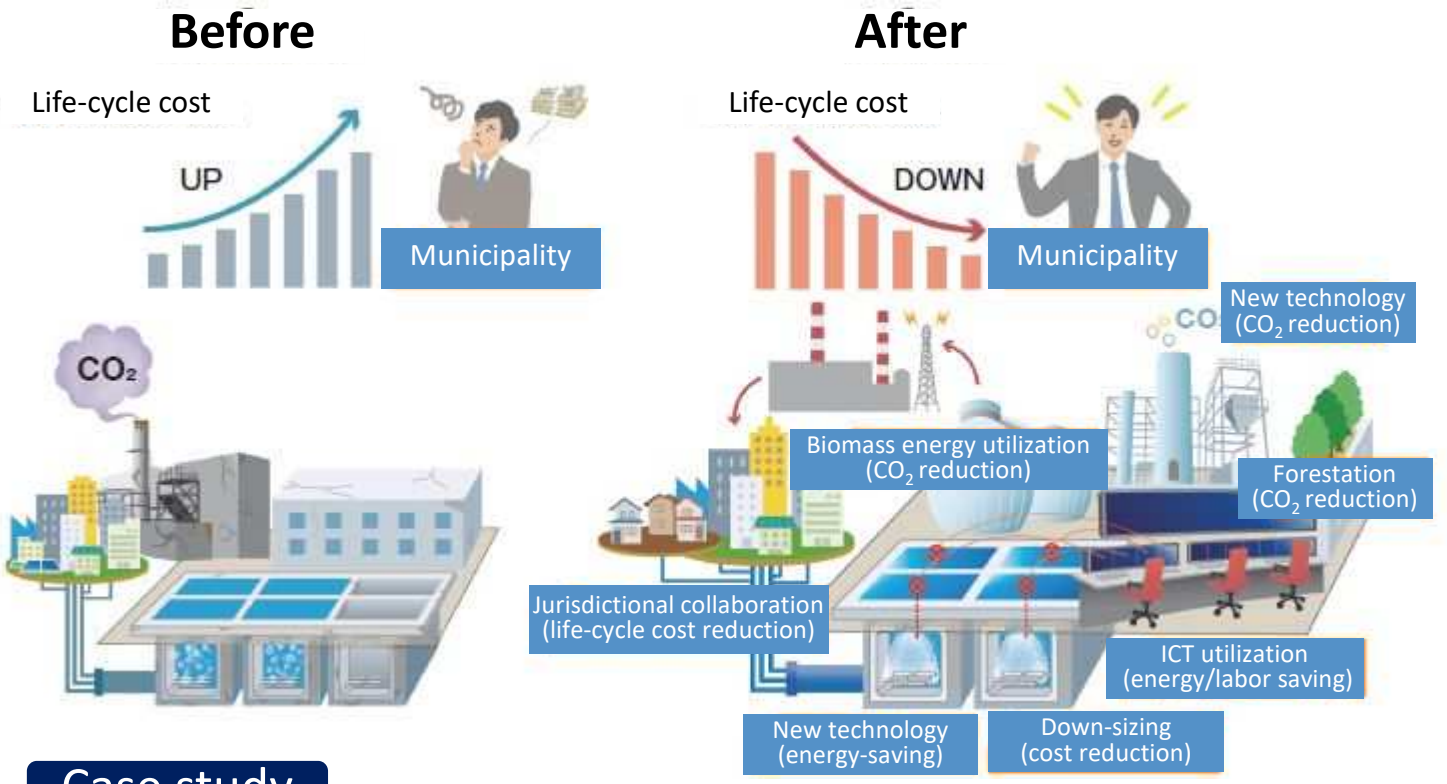
- Comprehensive support for continuous and developing wastewater management
- Support management strategy development for a healthy municipal wastewater management

6 O&M

- Enhance O&M support by a support menu
- System improvement for high-quality O&M and business management

Retrofit

JS studies and develops municipality-custom asset management plans, new technology adoption, and supporting retrofit. We go for reducing the life-cycle cost to cope with municipal issues and needs, including aging facilities, downsizing due to population decline, energy-saving, and efficient management by cross-jurisdictional collaboration.



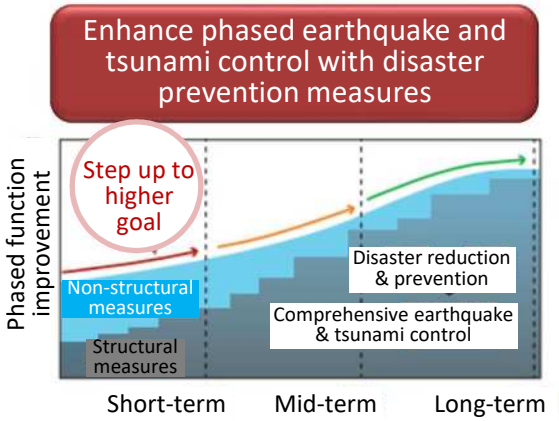
Case study

Implement a large-scale retrofitting at other site for aging facilities. The new facility has adopted a sludge treatment system utilizing sewage sludge-derived fiber. The system could reduce dewatered sludge generation and sludge disposal costs.

Rendering of the completed facilities

Earthquake and Tsunami Control

Sewerage system needs to secure its function in the time of natural disasters. JS supports municipal wastewater treatment facilities to prepare for powerful earthquakes or tsunamis that may happen in the future or proposes disaster prevention at their retrofit.



Example of tsunami control measures (Installed outdoor stairs)

Countermeasures against inundation

Recent furious disasters caused by climate change seriously impact people's lives and the social economy. JS supports municipal flood control from plan development to facilities design and construction based on the revision of river basin management law, including Sewage Law.

Support flow - from plan development to facilities' design & construction -

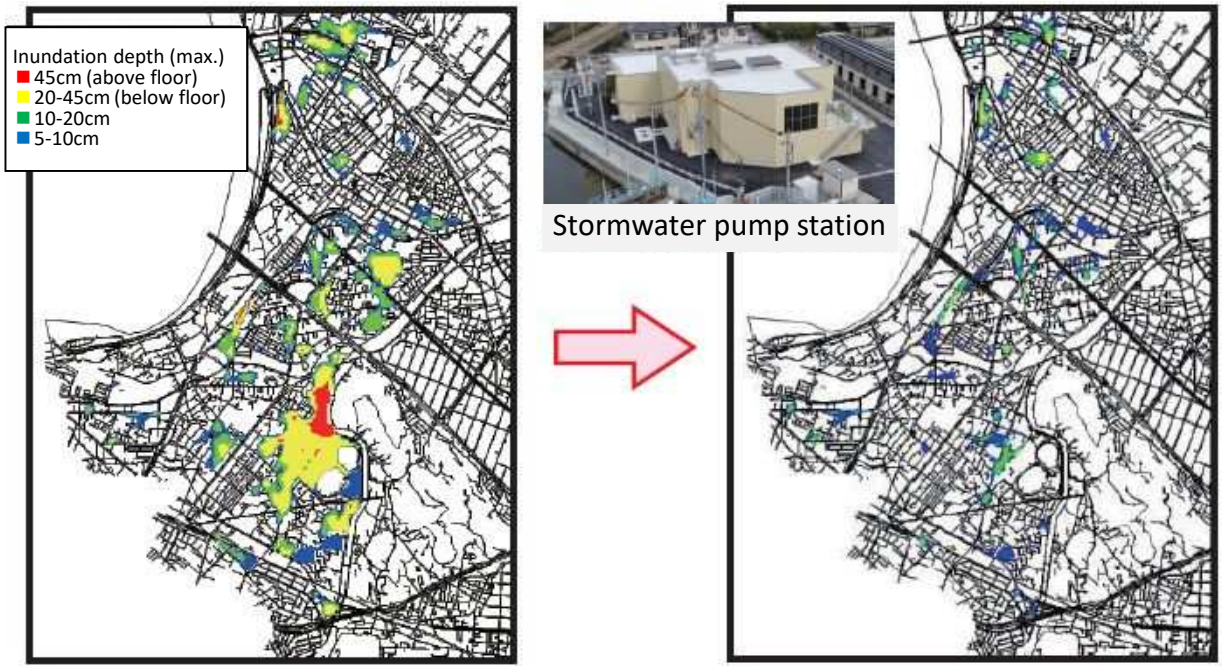
1. Assumed inundation areas by inland water
   : Risk evaluation by inundation simulation

2. The comprehensive rainwater management plan development
   : Sewerage master plan with inundation management

3. Reviewing project plan including improvement policy and design rainfall

4. Design and construction of rainwater pump stations and reservoirs

Inundation simulations and rainwater pump stations reduce damages



Inundation simulation (before)

Stormwater pump station

Inundation simulation (after)

Disaster control

Support for natural disasters

JS' seven regional offices quickly function in disasters for emergency support. Everyday cooperation and management with municipalities are critical for efficient and effective emergency response.

Everyday support

Minimizing damage and accelerating recovery from disasters require combined hardware and software solutions. Hardware solutions include facilities' earthquake resistance and inundation control. BCP development, waterproof planning development, and disaster drills are examples of software solutions. JS cooperates with municipalities to provide disaster control support for emergencies.

Hardware solutions
Earthquake resistance,
Waterproof

+

Software solutions
Inundation simulation
BCP development support

Aseismic construction by concrete braces reinforcement

Joint disaster drill with municipal staffs

Emergency support

JS has signed disaster support agreements with some municipalities. The agreements facilitate JS to offer its know-how accumulated at the disaster recovery and support operations in each recovery phase.

Flow diagram of disaster support agreement

Disaster Occurrence ➡ The first investigation ➡ Disaster report ➡ The second investigation ➡ Meeting for constructors ➡ Meeting with relating organizations ➡ Emergency works ➡ Disaster assessment ➡ Post disaster reconstruction

The first investigation after a disaster

The conference between related organizations

Business management support

JS supports municipal sewerage management to achieve a sustainable sewerage projects. We promote cross-jurisdictional collaboration, new technology development and utilization, decarbonization, wastewater charges review by developing and revising management strategy.

Regional specialist

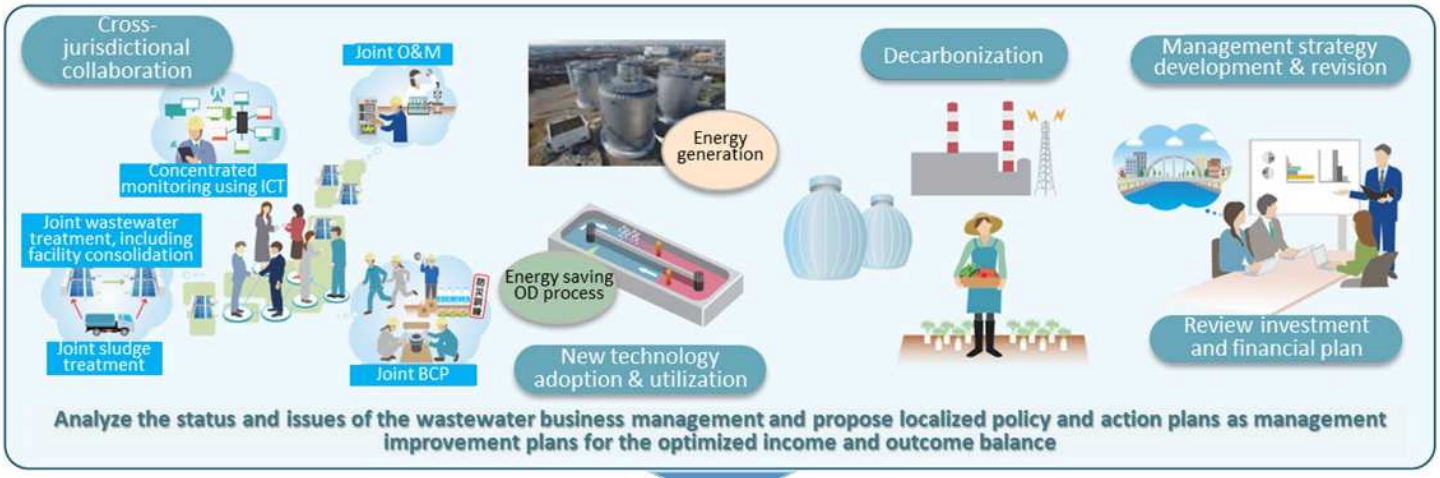
Trust from residents

Management history

Nationwide history of support

Accumulated Know-how

Technical & Training experts



Achieving sustainable wastewater business management by developing a "Management Strategy" for the efficient business implementation

O&M Support

Securing sustainable sewerage projects and taking over sound facilities to the next generation require management cycle establishment based on O&M.

O&M for WWTPs

JS has entrusted O&M of Ban-nan WWTP; CAS process; in Iwata city, Shizuoka from 2015 and supported its lifecycle enhancement.

Ban-nan WWTP overview

On-site checking operation

Encouraging outsourcing and privatisation of pipelines

In July 2022, JS signed up a partnership with the Japan Institute of Wastewater Engineering and Technology which has experience of encouraging municipalities to outsource and privatize O&M of pipelines.

Aging pipeline

TV camera describing the inside condition of pipelines

Source: MLIT HP

Actively lead a wastewater business transformation as an innovator

Various municipal needs and issues

- Population decline
- Aging facilities
- Decrease in skilled engineer
- Decarbonization
- Harsh financial situation
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JS leads a transformation to address issues; population declines, aging society, environment, and energy

JS's business based on the 6th Mid-term Management Plan

1 Cross-jurisdictional collaboration

- Facilities consolidations and wastewater/sludge intensive treatment
- Joint monitor and O&M for facilities, including pump stations

2 PPP / PFI

- Full support of PPP/PFI projects from planning to completion
- Contract packaged DBO of design, construction, and O&M

3 For a decarbonization society

- Introduce energy-saving, sewerage resource/energy utilization technologies
- Commercialize renewable energy utilization including energy-creation

4 New technology development and utilization

- The development and utilization of the innovational decarbonization technology
- Promote new technology introduction based on JS's new tech implementation program

Cross-jurisdictional Collaboration

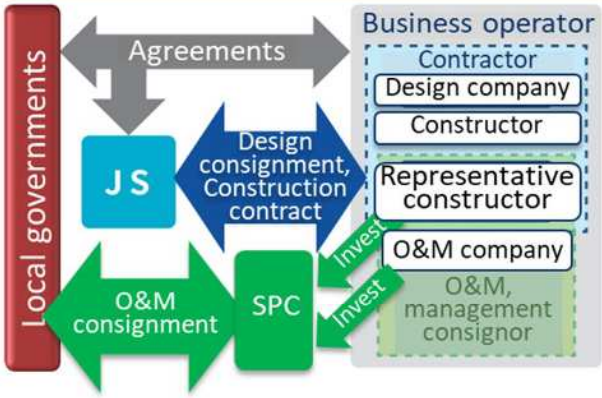
Facilities' improvement and system optimization through cross-jurisdictional collaboration are part of solutions for issues in sewerage projects. JS will propose hardware solutions, facilities' mergers and abolition, and integrated treatment of wastewater and sludge; software solutions; O&M and disaster control and management.

PPP/PFI Project

PPP, Public Private Partnership, allows the "Public" to achieve projects' efficiency through collaboration with the "Private" by utilizing its know-how and technology. JS supports municipalities' new operations, such as prior examinations and execution supervisions for PPP adoption. JS's PPP support menu covers project formation to project completion; they are PPP/PFI such as concessions, DBO unifying design, construction and O&M, and sewerage asset management.

Image of PPP

DBO example: DB+(O)



In the DB+(O) scheme, JS and design and construction contractors make a "DB" contract, and municipalities and SPC make an "O" contract.

JS has supported four projects as of May 2023

Achieving a Decarbonization Society

Today, the world needs actions against global warming for "Carbon neutral by 2050." The wastewater business also actively deals with decarbonization. The Japanese government positions the energy reuse of sewage sludge as a critical political issue. The country needs a prompt and secure adoption of decarbonization technology, such as energy-saving and sewerage resources energy reuse. The wastewater projects have various technologies, including energy-saving in treatment facilities and sewage sludge reuse. JS has developed the "JS Decarbonization Policy" to promote introducing energy-saving technologies contributing to decarbonization while considering regional characteristics and facilities' conditions. JS will aggressively enhance energy-creation technologies and try to maximize the potential of wastewater through practical application. Through the above efforts, JS will provide one-stop support for municipalities from plan development and facility improvement.

Propose the best decarbonization technology with one-stop service

JS New Tech Implementation Program, B-DASH Project

Asset Management

Consider the optimum greenhouse gas reduction plan

Optimum technology, utilization, operation management

Develop a project plan and road map

Design and construction of energy-saving, resource utilization facilities

JS proposes the best decarbonization technology with our know-how and R&D experiences.

Examples of Decarbonization Technology

CO_2 reduction by energy-saving

Low pressure loss membrane diffuser

Smaller air bubbles than the conventional aerators enable a high oxygen transfer efficiency and significant aeration volume reduction.

Sewage sludge utilization as energy

Steel digestion tank

Adopting the digestion process and accepting regional biomass produce biogas. Biogas power generation newly creates green energy.

N_2O reduction by high temperature incineration

Next generation type incineration system

A high-temperature zone inside the furnace can significantly reduce N_2O; greenhouse gas, emissions. The system also reduces fuel and power costs.

Introduction of renewable energy

Solar power generation

The solar power generation system uses wastewater facilities' upper space, promoting power self-sufficiency and green energy.

New Technology Development & Utilization

R&D

JS implements basic research and joint research based on the two policies stated in the "JS Technology Development & Utilization Basic Plan 2022" and promotes new technology development contributing to carbon-neutral and sustainable wastewater project management.

1. Development and Utilization of Decarbonization Technology

Decarbonization technology for 2030

- Energy-saving, small-scale wastewater treatment system
- Improvement of biogas utilization
- Low-cost sludge thickening and dewatering
- Steel plate digestion tank
- Next-generation combustion tank
- Organization of decarbonization technologies

Carbon-neutral type wastewater treatment system

- Finding energy-creating and energy-saving technologies beyond conventional wastewater and sludge treatment

Carbon-neutral type wastewater treatment system: aims to minimize energy consumption and GHG emission and maximize the energy potential utilization of wastewater for GHG-zero emission by combining innovative decarbonization technologies

2. Development and Utilization of Technologies Meeting Policies and Needs

Further low-cost wastewater treatment

- Performance enhancement of air tanks and final settling tanks
- Large-scale temporary wastewater treatment facilities
- Low-cost sewage sludge thickening and dewatering

ICT & AI utilization at WWTPs

- Prediction & operation support by AI for wastewater & sludge treatment
- Study of Introduction possibility of AI into the active control of water quality
- Basic experiments using test plants

Sewerage resource utilization

- Sewage sludge resource utilization as energy and agricultural use
- Demonstration of sewage sludge's high-speed fermentation and drying technology (B-DASH project)
- Dynamic analysis of useful resources, including nitrogen, phosphorus, and kali, in the treatment process
- Survey and test of sewage sludge fertilizer

Technology Utilization

JS chooses new technologies and promotes their utilization in its contract projects. This activity has a unique feature in that JS verifies the adaptabilities of new technologies, including those developed other than JS.

Topic **Development and dissemination of the agricultural use of sewage sludge resource**

The social need for the agricultural use of sewage sludge resource is increasing today. JS has revised the "JS Basic Plan of R&D and Utilization 2022" to enhance its survey and study on this theme to promote dissemination.

Contribute to social development by creating a public infrastructure as a wastewater platformer

Various municipal needs and issues

- Population decline
- Aging facilities
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JS contributes to the social development through wastewater projects

JS's business based on the 6th Mid-term Management Plan

1 Leading-edge ICT development, practical application, and dissemination (DX promotion)

- Quality and service improvement of design and construction and innovation creation using digital technology, including BIM, telepresence
- Maximize DX effects through the establishment of the Knowledge management system

2 Technology standards development

- Quality security and improvement of design and construction through reflecting ICT and digital technology utilization and new technologies on the technical standards
- Evaluate new technology and reflect promptly the result to the standards

3 International water business support and international contribution

- International wastewater project formation, planning, construction, and O&M to facilitate the overseas expansion of domestic wastewater business

4 HRD for municipal and private engineers

- Various training program menu: Online training, a hybrid of accommodation and online, etc.
- Improvement of training environment by new dorm facility

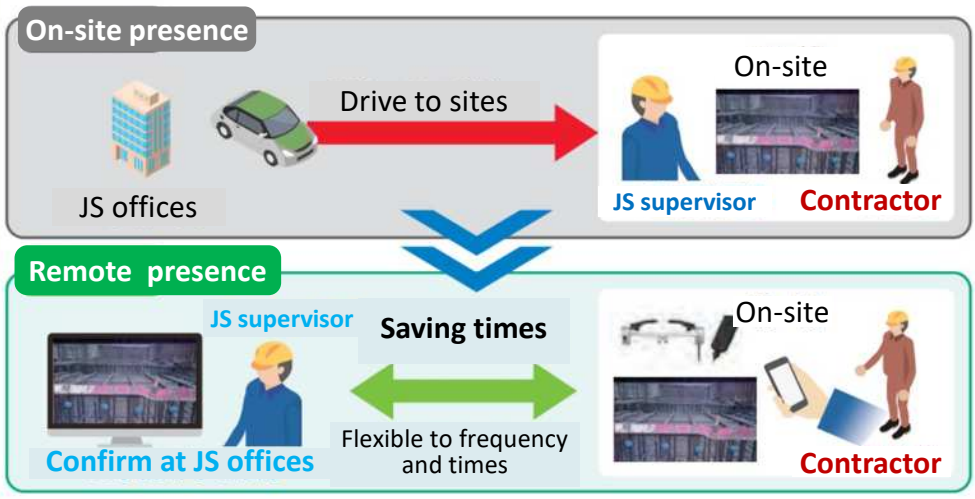
Promoting Digital Transformation (DX)

Development, Practical Application, and Promotion of Leading-edge ICT

Adopting BIM

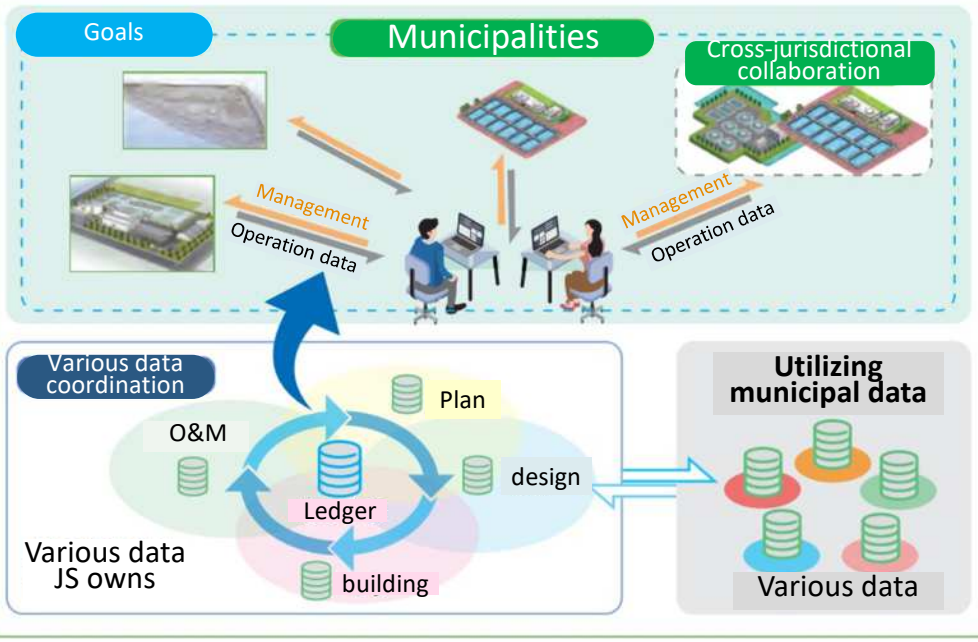
- Promoting design and construction by utilizing BIM and aiming for O&M management
- Leading reform, including productivity improvement and sophistication of the sewerage business through the maximum utilization of digital technology

Telepresence at construction sites



- Achieving efficient construction work by telepresence without no effects of time adjustment
- Promoting a smooth construction process and improving quality by participants of professional engineers to the telepresence with rich experiences

Streamlining, efficiency, and sophistication of sewerage business management by DX



- Supporting an improved data environment and contributing to making facility ledger data
- Utilizing BIM and construction data-sharing systems for the accumulation of data for business management
- Achieving sophisticated asset management through various data coordination and a smooth CAPD cycle

Overseas Water Business Support and International Contribution

" JS supports the domestic private companies' global presence and international municipal contribution based on the "Law relating to promoting entry to infrastructure projects in the worldwide market," enacted in August 2018.

Wastewater Project Support for Overseas Countries

JS supports global project from upstream to downstream

Technology seeds

Project planning

Project execution Design, construction

Start of operation O&M

Project planning

Investigations relating project planning

ex: Technical seminar, Pre F/S, Master plan development, F/S review

Project management

Supporting design examination and construction supervision relating Japanese technologies

ex: Supporting design/construction supervision

Promoting verified technology for its overseas application

ex: Technology verification program for global use, WOW TO JAPAN

Human resource development

Training program for sewerage engineers/ administrators

ex: Training for Dornogovi of Mongolia by Shizuoka prefecture, JICA training

O&M

Technical advice of O&M for WWTPs adopting Japanese technology

Support for Municipal International Operation

JICA grassroots technical cooperation for Dornogovi, Mongolia, by Shizuoka prefecture (2016-17, 2021-)

Training at Kanogawa East WWTP

Training at Sainshand treatment facility, Dornogovi

JICA grassroots technical cooperation for the Wastewater Management Authority (WMA) of Thailand by Saitama prefecture (2012-14, 2016-18)

Seminar in Bangkok

Achievement of support: beautifully renovated Siracha WWTP, Thailand

HRD Support for Wastewater Engineers

Training Program for Wastewater Management & Engineering

Features of JS Training Program

① Program covers every phase of wastewater project: *master planning, management, detail design, construction supervision, O&M, and PPP/global activities*

② Offering practical curriculum with drills and laboratory works

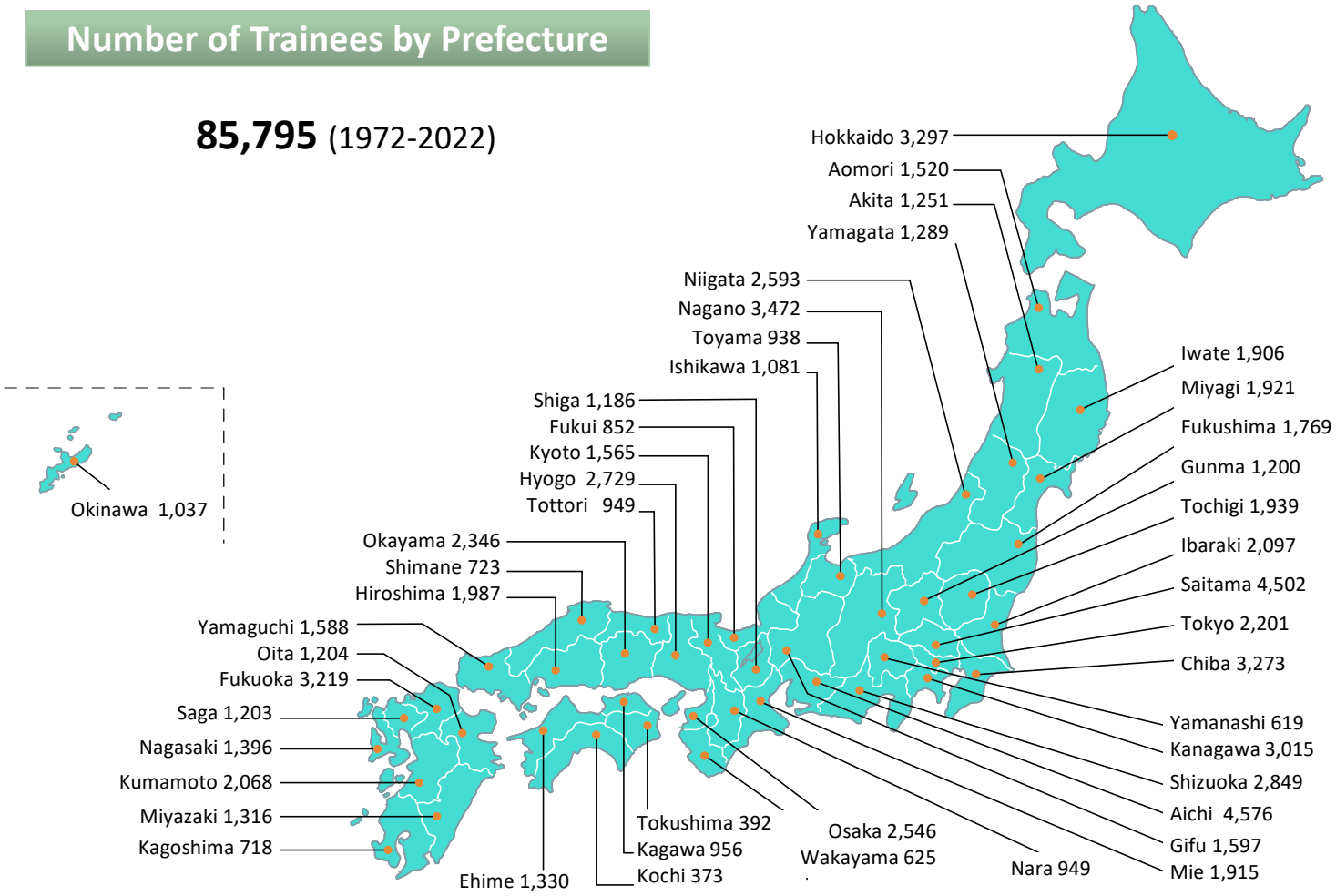
③ Offers various courses including online program

④ Providing qualifying course for Article 22 of Sewage Law

⑤ Residential facilities accommodate trainees in Toda City, Saitama Prefecture

Number of Trainees by Prefecture

85,795 (1972-2022)



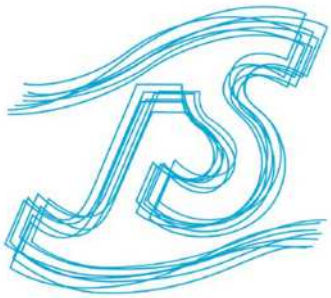
*JS offers online or hybrid training programs according to increasing work home.

Fine Facilities

Private dome rooms provide space where trainees can concentrate on their program.
The lounge room offers excellent networking opportunities for trainees.

Lounge room

New dorm appearance



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