

WORKSHOP ON URBAN FECAL SLUDGE MANAGEMENT

INSTITUTIONAL AND REGULATORY SYSTEM FOR SEPTAGE MANAGEMENT IN JAPAN

Hanoi, Vietnam

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Pierre Flamand



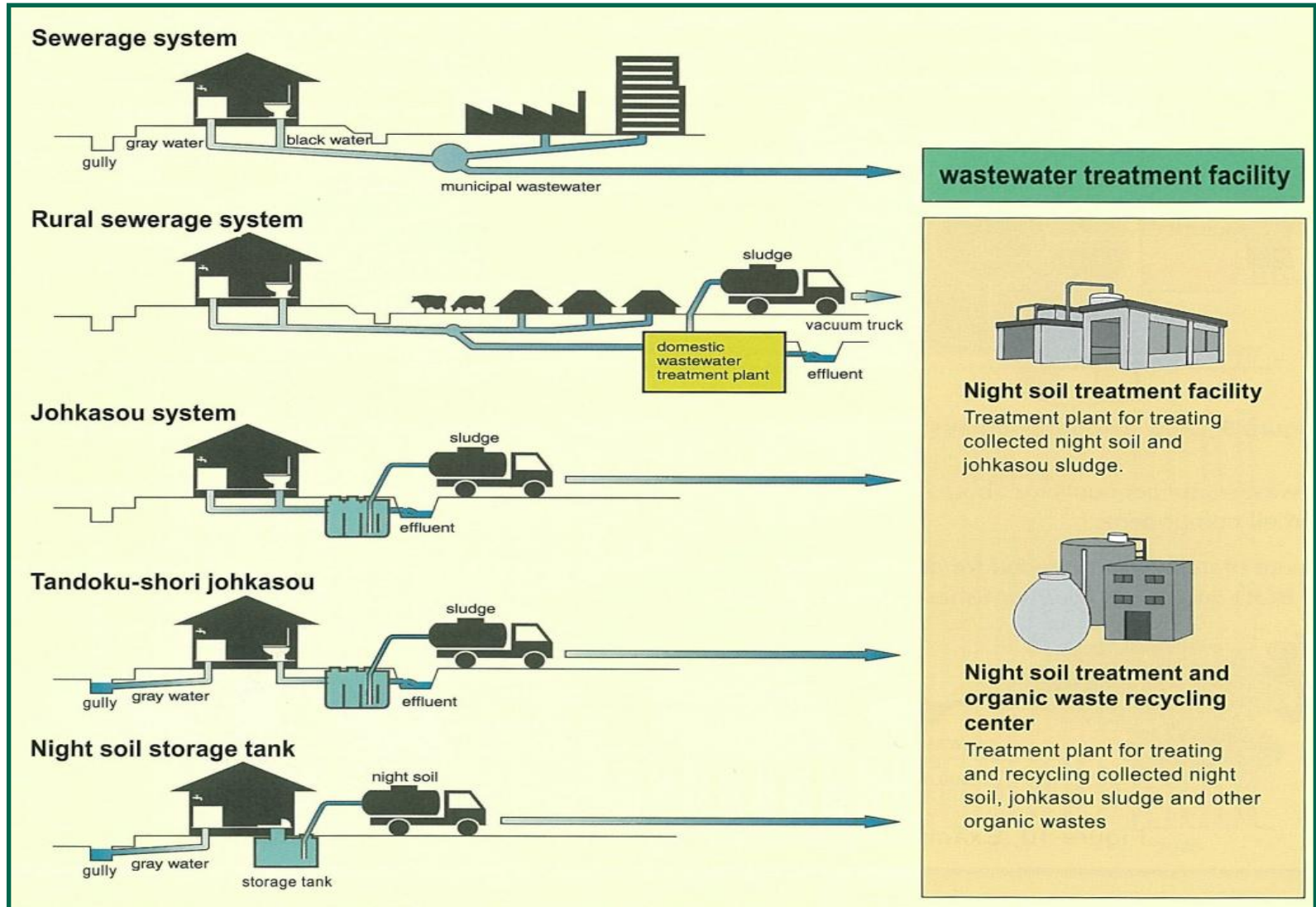
JSC

Japan Sanitation Consortium

APWF KNOWLEDGEHUB

Solving sanitation issues
in the Asia-Pacific

NIGHT SOIL AND DOMESTIC WASTEWATER TREATMENT SYSTEMS IN JAPAN



CURRENT CONDITIONS OF NIGHT SOIL – JOHKASOU SLUDGE TREATMENT IN JAPAN (1)

FLOW OF NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT

	Generated Waste	Collection and Storage	Conveyance	Treatment - Disposal
Night Soil	Households - Large buildings 1. Centralized Wastewater Treatment → Flush Toilets + sewerage 2. Decentralized Wastewater Treatment → 2 types of facilities when discharge of effluent. 2.1 Discharge of black water only: Flush toilet + Tandoku-shori johkasou 2.2 Discharge of grey and black water: flush toilet + johkasou 3. When effluent not discharged: Vault toilet + storage tank	2. Tandoku-shori johkasou and johkasou 3. Vault toilet + night soil storage tank	1. Sewer systems 2. & 3. Vacuum truck	1. WWT Treatment Plant → Sludge → main sludge disposal method: dewatering + incineration + landfilling 2. & 3. Night Soil Treatment Facility (biological treatment) Night soil Treatment and Organic Waste Recycling Center → main sludge disposal method: <i>same as above</i>
Johkasou Sludge	From Tandoku-shori johkasou and johkasou	Tandoku-shori johkasou and johkasou	Vacuum truck	<ul style="list-style-type: none"> Night Soil Treatment Facility Night soil Treatment and Organic Waste Recycling Center

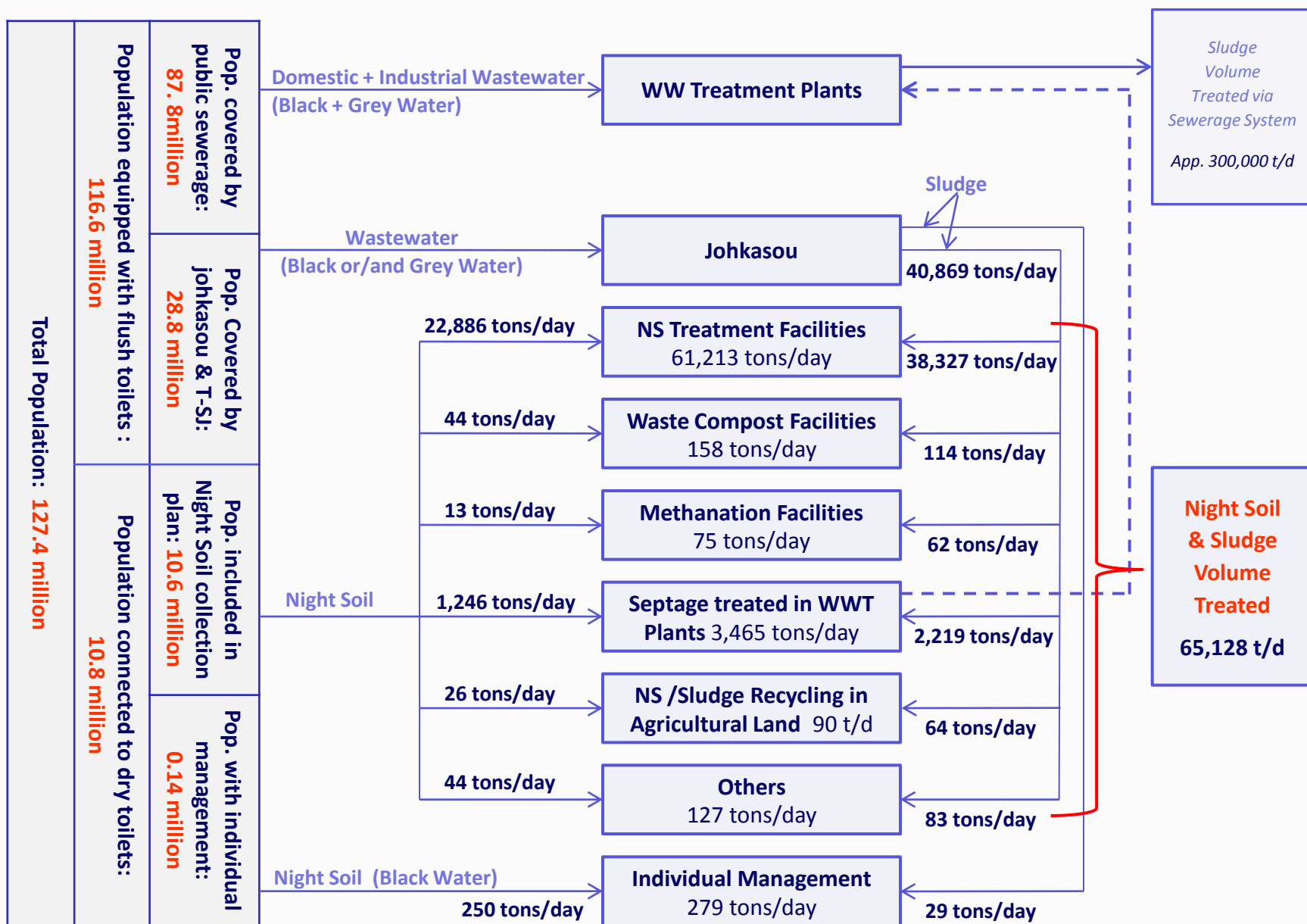
Tandoku-shori johkasou = treatment of black water only

Johkasou = treatment of black water + grey water

Johkasou sludge = sludge generated in tandoku-shori johkasou or johkasou

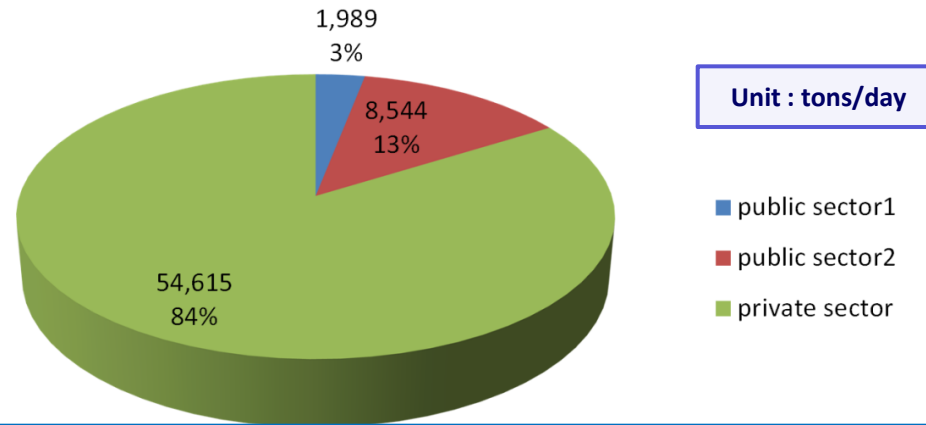
CURRENT CONDITIONS OF NIGHT SOIL – JOHKASOU SLUDGE TREATMENT IN JAPAN (2)

RESULTS OF NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT (FY 2009)



CURRENT CONDITIONS OF NIGHT SOIL – JOHKASOU SLUDGE TREATMENT IN JAPAN (3)

VOLUME OF COLLECTED NIGHT SOIL AND JOHKASOU SLUDGE



NOTE

Public sector 1: night soil /johkasou sludge is collected and transported by officials from local governments.

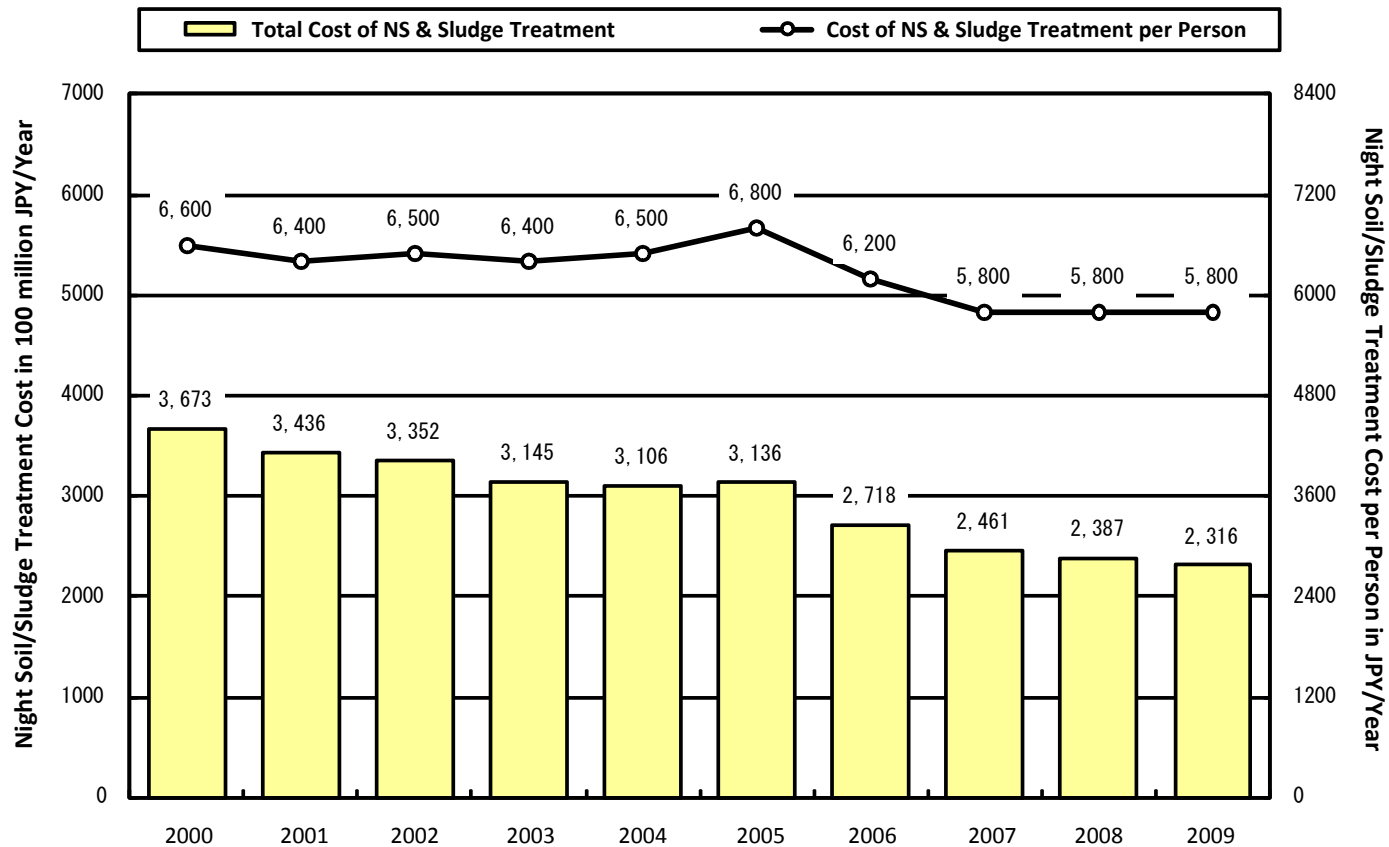
Public sector 2: night soil /johkasou sludge is collected and transported by staff of private companies. In that case, local governments conclude a contract with private companies and remunerate them for the provided service. However, all the responsibility for collection remains to local governments.

Private sector: private companies with permission from local governments collect and transport night soil/johkasou sludge on a business base.

Officials involved in septage management in local governments (FY 2009)	7,228
Number of private companies related to septage management business (FY 2009)	5,341

CURRENT CONDITIONS OF NIGHT SOIL – JOHKASOU SLUDGE TREATMENT IN JAPAN (4)

COST OF NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT



Cost for:

- Implementation of facilities
- Operation and maintenance
- Activities of private sector
- Municipal employees

Financing Resources

- General financing
- National subsidy – tax
- Prefectural financial support
- Municipal bond
- Treatment charge

Example of Desludging Fees for 5 PE Facilities

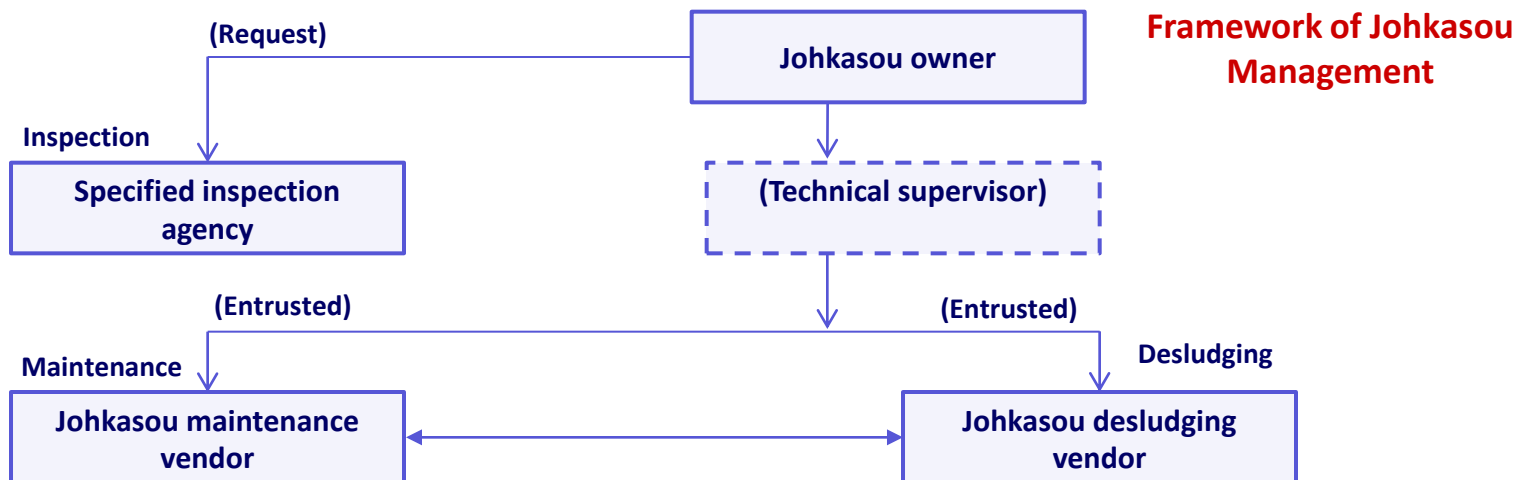
- Desludging fee for johkasou: 26,000 JPY/year
- Desludging fee for vault toilet: 2,000 JPY/op. (usually 3 times/year)

OUTLINE OF LEGAL AND REGULATORY SYSTEM FOR NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT

Generated Waste	Collection and Storage	Conveyance	Treatment – Disposal
<p><u>1. WASTE DISPOSAL AND PUBLIC CLEANSING LAW</u></p> <ul style="list-style-type: none"> Master plan for domestic wastewater treatment (planning of areas covered by sewerage system and areas covered by johkasou) <p><u>2. WATER POLLUTION CONTROL LAW</u></p> <ul style="list-style-type: none"> Performance of johkasou to be installed (scale, areas) <p><u>3. BUILDING STANDARD LAW</u></p> <p>Application – validation</p> <ul style="list-style-type: none"> Building certification Completion inspection <p>Installation of sanitation equipment in buildings</p> <ul style="list-style-type: none"> Flush toilet Johkasou Night soil storage tank <p>Quality – structure of sanitation equipment</p> <ul style="list-style-type: none"> Structure of vault toilet Structure of night soil storage tank Technological standards for performance of domestic wastewater treatment Structure of johkasou/determination of size <p>Type certification</p> <ul style="list-style-type: none"> Certification for type conformity (storage tank, tandoku-shori johkasou, johkasou) <p><u>4. JOHKASOU LAW</u></p> <p>Legal construction procedures</p> <ul style="list-style-type: none"> Construction application Type approval Registration for construction business Technical standards for construction Certification of Installation Worker 	<p><u>1. BUILDING STANDARD LAW</u></p> <p>Quality of sanitation equipment – structure</p> <ul style="list-style-type: none"> Capacity of night soil storage tank <p><u>2. JOHKASOU LAW</u></p> <ul style="list-style-type: none"> Desludging frequency of johkasou for individual households (storage period) Desludging frequency for medium and large scale johkasou (desludging plan) License for johkasou desludging business Technical standards for johkasou desludging Training of desludging technicians 	<p><u>1. WASTE DISPOSAL AND PUBLIC CLEANSING LAW</u></p> <ul style="list-style-type: none"> License for domestic waste disposal and treatment business License for collection and transport business 	<p><u>1. SEWERAGE LAW (Abbreviation)</u> (implementation of WWT treatment plants, etc.)</p> <p><u>2. WASTE DISPOSAL AND PUBLIC CLEANSING LAW</u></p> <ul style="list-style-type: none"> Master plan for waste disposal and treatment facilities (implementation of night soil treatment facilities - night soil treatment and organic waste recycling centers) Master plan for solid waste treatment (implementation of landfill sites) Training of O&M technicians <p><u>3. WATER POLLUTION CONTROL LAW</u></p> <ul style="list-style-type: none"> Regulation for discharged effluent <p><u>4. GUIDELINES FOR O&M OF NIGHT SOIL TREATMENT FACILITIES – NIGHT SOIL TREATMENT AND WASTE RECYCLING CENTERS</u></p> <ul style="list-style-type: none"> Performance requirements

Operation & Maintenance for Johkasou System in Japan

- To properly function and deliver its expected performance, the johkasou owner has a statutory obligation to periodically conduct maintenance and ensure that sludge is regularly collected.
- However, johkasou owners do not have sufficient knowledge for O&M.
 ↳ this work is mainly entrusted to johkasou vendors and desludging vendors.
- Another statutory obligation requires that johkasou receives annual inspection to confirm that:
 - Desludging was correctly executed
 - The unit is performing as designed
 - Water quality is meeting standards



LEGAL AND REGULATORY SYSTEM FOR NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT (1)

I. Steps for generated waste (1)

2. Water Disposal and Public Cleansing Law

- Inside the municipal area, domestic wastewater treatment (including night soil/johkasou sludge) becomes local government/municipality 's responsibility.
- Municipalities must create a standardized plan for domestic wastewater treatment inside their area. This plan is called '**Master Plan for Domestic Wastewater Treatment**'.
- The 'Master Plan for Domestic Wastewater Treatment' needs to enable the selection of either the sewerage system, johkasou, and vault toilets to respond to local specifics for efficient domestic wastewater treatment.

LEGAL AND REGULATORY SYSTEM FOR NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT (1)

I. Steps for generated waste (2)

2. Water Pollution Control Law, etc.

- johkasou with capacity over 50m³/day have to comply with the regulations on water quality from the Water Pollution Control Law.
- Johkasou installed in areas targeted by the **Law concerning Special Measures for the Conservation of Lake Water Quality** and **other Laws**, must include advanced treatment performance to remove nitrogen or/and phosphorous.

LEGAL AND REGULATORY SYSTEM FOR NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT (1)

I. Steps for generated waste (3)

3. Building Standard Law

Application – validation

- building certification
- completion inspection

Implementation of sanitation facilities

- flush toilet
- johkasou
- night soil storage tank

Performance – structure

- structure of vault toilet
- structure of night soil storage tank
- technological standards for treatment, performance of domestic wastewater
- structure of johkasou / size determination

Type approval

- certification for type conformity (NS storage tank, tandoku-shori johkasou, johkasou), johkasou performance evaluation test

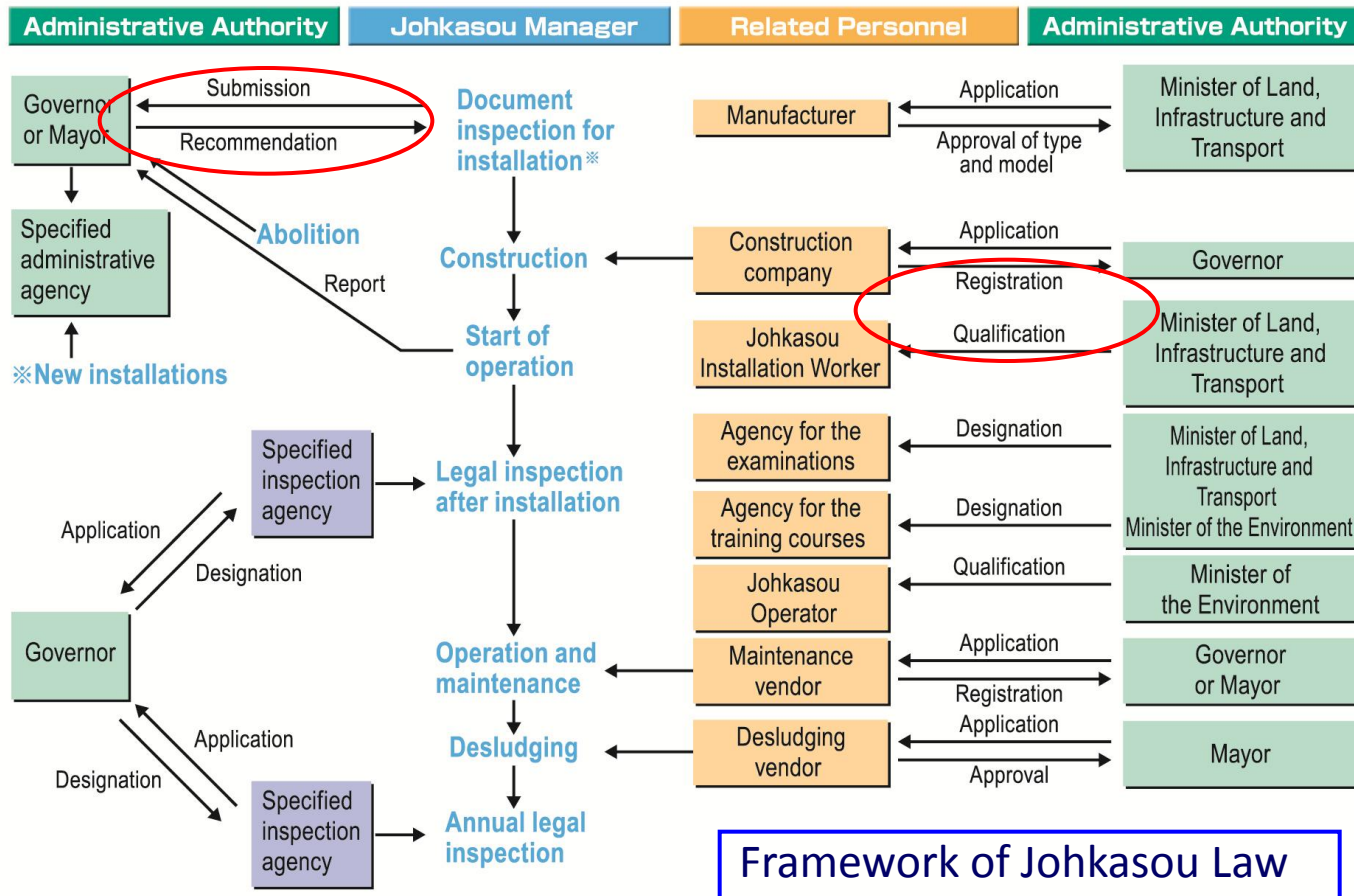
LEGAL AND REGULATORY SYSTEM FOR NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT (1)

I. Steps for generated waste (4)

4. Johkasou Law

Legal construction procedures, etc.

- application for installation
- registration for construction business
- technical standards for construction
- certification of Installation Worker



LEGAL AND REGULATORY SYSTEM FOR NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT (2)

2. Storage and collection stages

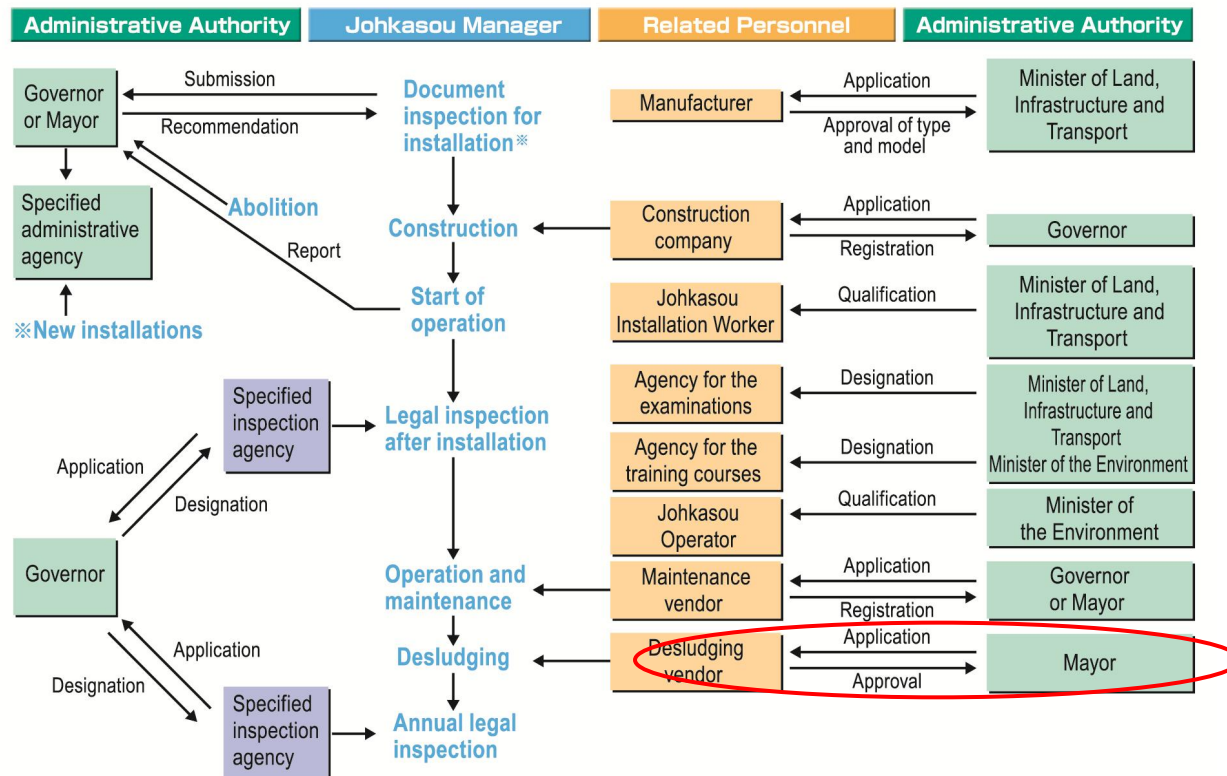
1. Building Standard Law

Performance – structure of building equipment

- Capacity of night soil storage tank

2. Johkasou Law

- Desludging frequency for individual households johkasou (storage period/collection interval)
- Desludging frequency for medium and large scale johkasou (sludge removal plan)
- License for desludging business, Technical standards for desludging



LEGAL AND REGULATORY SYSTEM FOR NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT (3)

3. Transport stages

1. Waste Disposal and Public Cleansing Law

- License for domestic waste treatment/disposal business
- License for collection and transport business

LEGAL AND REGULATORY SYSTEM FOR NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT (4)

4. Treatment - disposal stages

1. Waste Disposal and Public Cleansing Law

- Master plan for waste treatment facilities (night soil treatment facilities & night soil treatment and organic waste recycling centers)
- Master plan for waste disposal (implementation of landfill sites)

2. Water Pollution Control Law

- Regulations for discharged effluent quality (night soil treatment facilities and others)

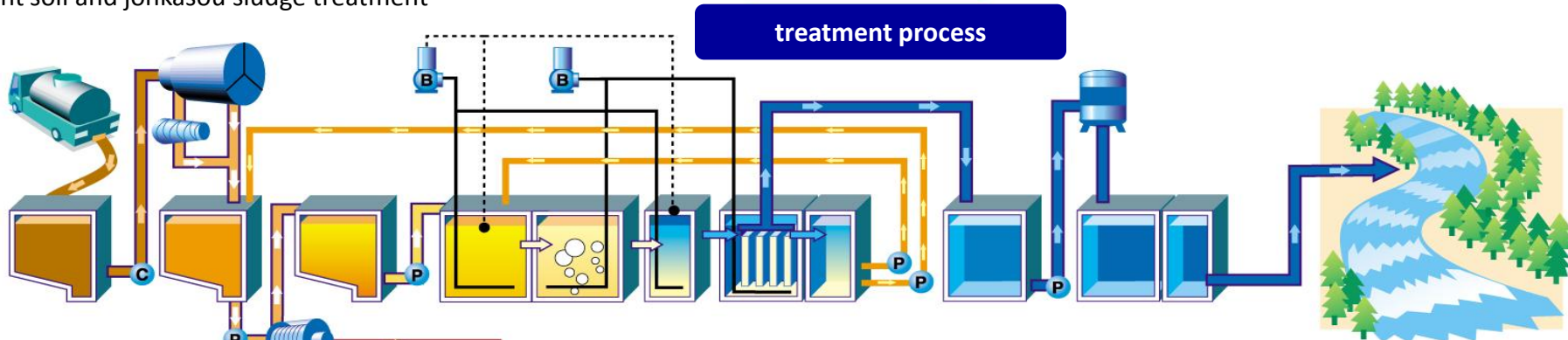
3. Performance of NS treatment facilities & NS treatment and organic waste recycling centers – Guidelines for operation and maintenance (O&M)

4. Structure for training of O&M technicians

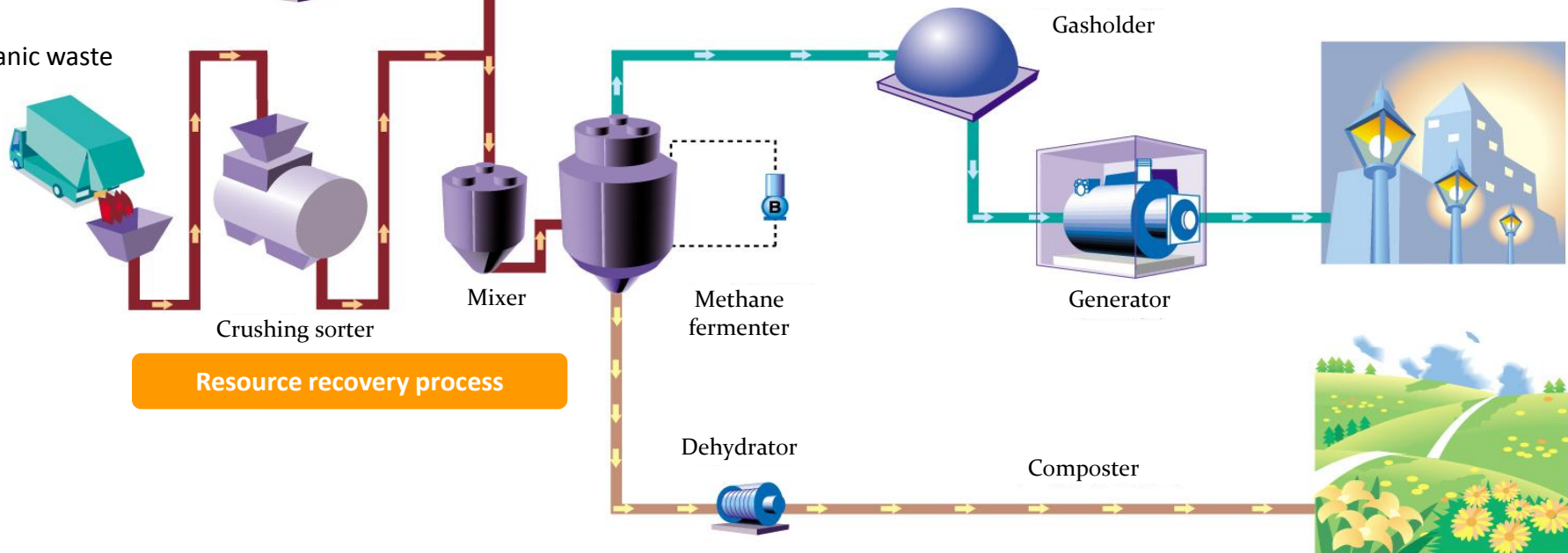
NIGHT SOIL TREATMENT AND ORGANIC WASTE RECYCLING CENTER

decentralized systems

● Night soil and johkasou sludge treatment



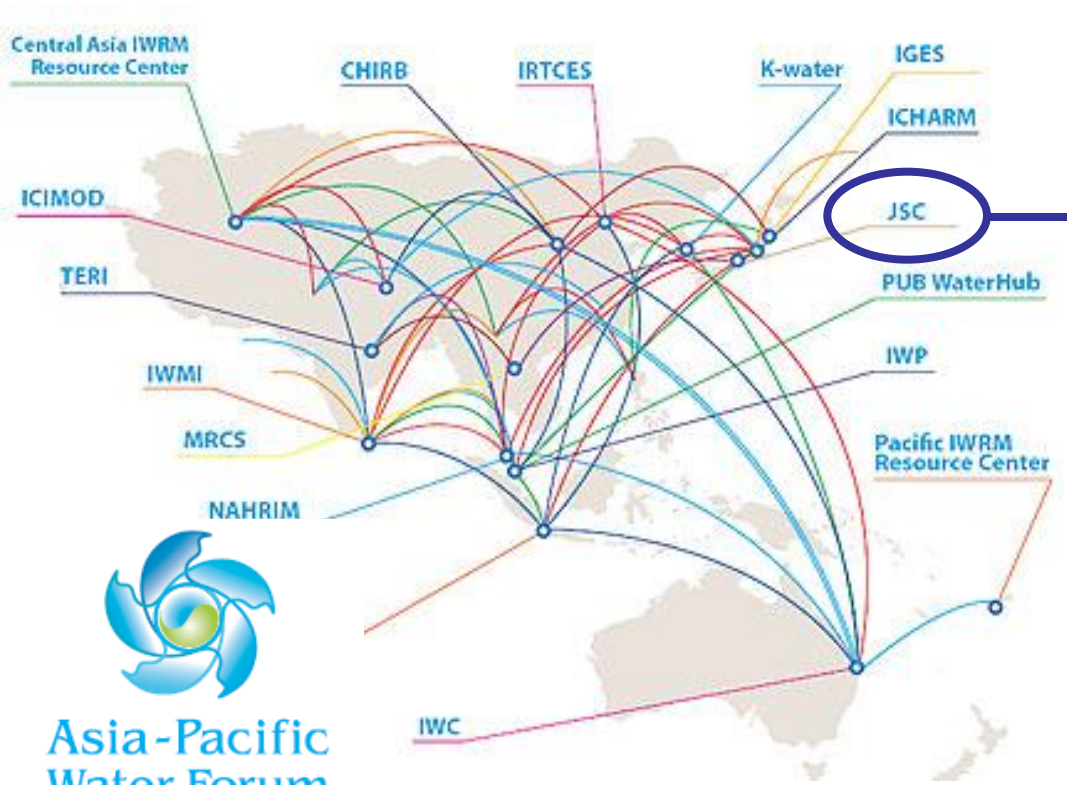
● Organic waste



CONCLUSIONS

- 1. When considering the preservation of public health and water environment, it is highly important to well establish and enforce laws and related regulations at all stages of septage management, including sludge generation, storage and collection, transport, treatment and disposal.**
- 2. Regulations on sanitation equipment in buildings that ensure the volume and quality of treatment of the generated waste on-site facilitate the planning and implementation of septage management.**
- 3. To establish a sustainable septage management system nationwide, a framework for the training of O&M technicians by regulations is important.**
- 4. To promote the recycling of septage and other organic wastes, a framework for financial support and regulations is necessary.**

- The Japan Sanitation Consortium (JSC) was launched on 16 October 2009
- JSC consists of the 4 main national agencies managing on-site and off-site sanitation in Japan
- JSC aims to utilize Japan's advanced experience in sanitation and successful models from other countries to solve related issues in the region



- JSC collaborates with **ADB** and other Donors Agencies, international organizations, NGOs, etc. for regional sanitation improvement

● **JSC MEMBER ORGANIZATIONS**

Off-site Sanitation

- Sewerage Business Management Centre
- Japan Sewage Works Association



On-site Sanitation

- Japan Environmental Sanitation Center
- Japan Education Center of Environmental Sanitation





JSC Sanitation KnowledgeHub, Japan

Regional Water Knowledge Hub for Sanitation

■ JSC Expertise

- Member of a regional network of water specialists, committed for sanitation development in the Asia-Pacific region
- On-site and off-site sanitation specialized organization

■ JSC Services

- Networking, information gathering & sharing, knowledge dissemination, support to activities of International Donor Organizations

■ JSC Partners

- ADB, JICA, Japan Water Forum, UNICEF, Japan Toilet Labo, etc.



Thank you for your attention

Knowledge Networking for Water Security in the 21st Century

e-mail: info@jsanic.org
www.jsanic.org
<http://gcus.jp/english/>