

A close-up photograph of a water droplet hitting a surface, creating a splash with ripples. The background is a solid light blue color.

Current Status and Policy on PPP in the Sewerage Sector in Japan and Vietnam

Norihide TAMOTO

JICA Expert (Sewerage Policy Advisor)
in Ministry of Construction, Vietnam

November 2022

Contents

1. Current status of sewerage projects in Vietnam
2. PPP projects in Japan
3. Challenges for PPP sewerage projects in Vietnam
4. Conclusion



1. Current status of sewerage projects in Vietnam

Rivers in Hanoi



To Lich River



Lu River

Photo by: Takatoshi WAKO



Thuy Khue Channel

Surface Water Quality in Vietnam (Ammonia as an example)

➤ The water quality of surface water bodies are significantly exceeding the standard value in the national regulation.

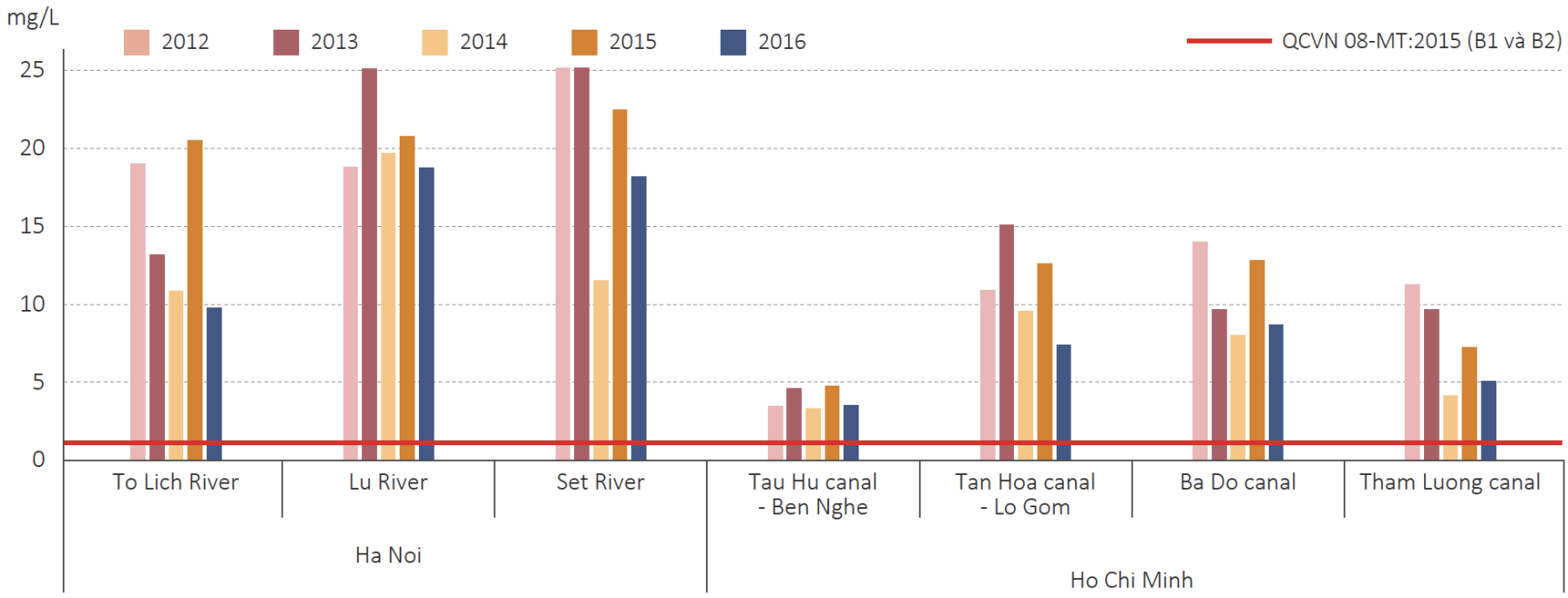
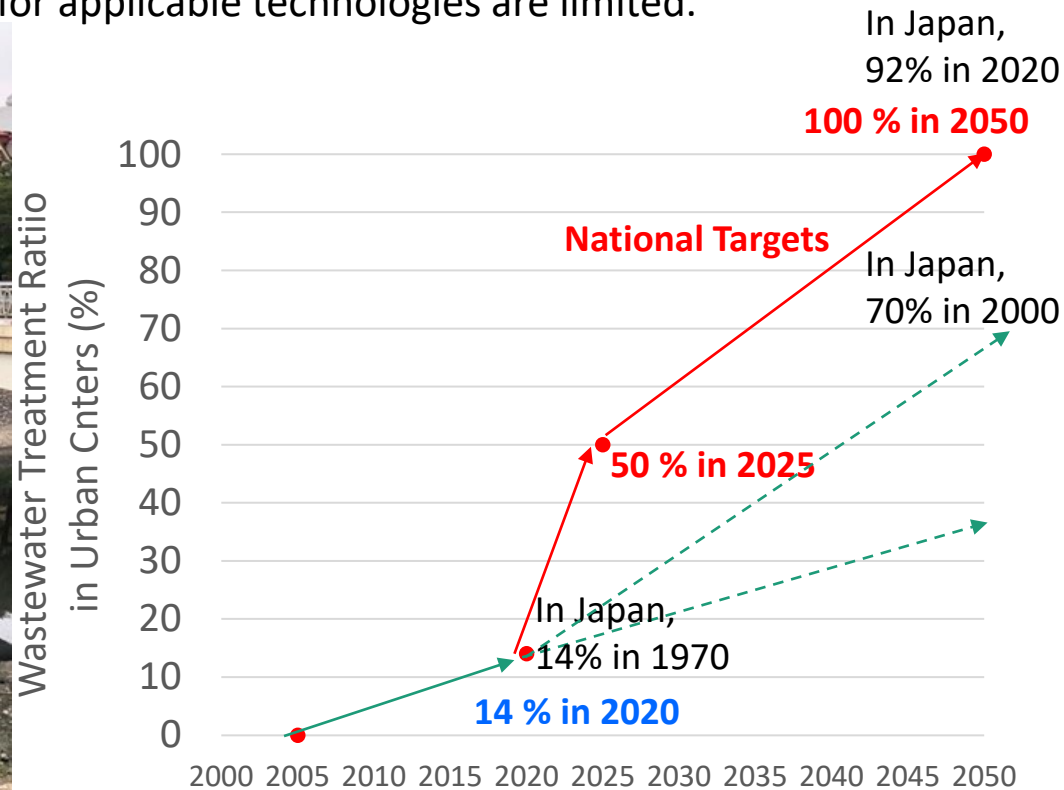


Figure 2.13.7. Changes in Ammonia content in some inner rivers, canals in Hanoi and Ho Chi Minh in the period of 2012–2016 (Source: MONRE 2016)

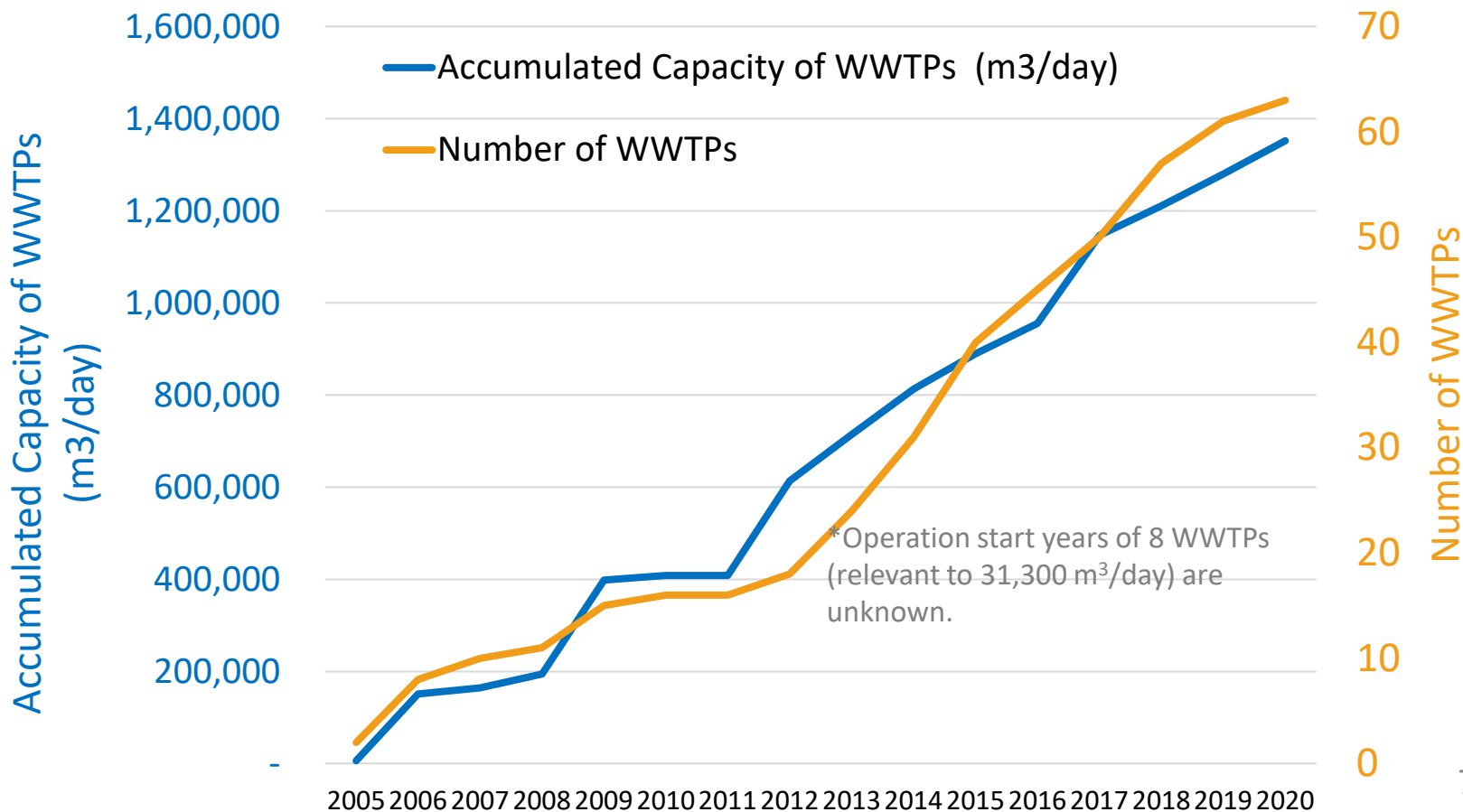
Wastewater Treatment Ratio (Only 14% in 2020)

- About only 14% of urban wastewater volume is collected and treated, which is far behind from the national target to achieve wastewater treatment ratio in urban centres of 50 % by 2025 and 100% by 2050 respectively.
- It seems to be difficult to reach the target by continuing the current trajectory under the situation where investment resources and choices for applicable technologies are limited.



Development of Sewerage System (71 plants under operation)

- As of the end of 2020, 71 centralized WWTPs are under operation with total capacity of 1,383,000 m³/day in 36 centrally run cities and provinces since the first small-scaled WWTP in Hanoi city started operation in 2005



Projects Under Construction (80 plants under design/construction)

- About 80 WWTPs are under design/construction; it is expected that total capacity of wastewater treatment would increase by 3 million m³/day.



- Yen Xa WWTP in Ha Noi City
- CAS, 270,000m³/day, JICA, Under construction
- Pipe jacking is adopted

(Photo: JFE Engineering, 2022)



- Binh Hung WWTP in Ho Chi Minh City
- CAS, 141,000 + **328,000** -> 469,000m³/day, JICA
- Pipe jacking is adopted

(Photo by : Mr. Ibaraki, JICA Expert, Feb. 2019)

Difficulties and Challenges in Wastewater Management in Vietnam

1. Poor qualities of sewer network and House connection

Causing inefficient wastewater collection, ineffective water environment improvement and less volume and concentration of Inflow leading poor performance of invested WWTPs.

2. Poor sludge and septage management

The volume of sludge are estimated to rapidly increase.

3. Lower pollution load in influent to WWTP

Use of septic tanks and poor quality of sewer networks make the pollution load lower, and difficult to estimate the pollution load.

4. Requirement of Wastewater treatment level

Removal of Nitrogen and Phosphorus is required for every WWTP.

5. Application of Drainage Service Price

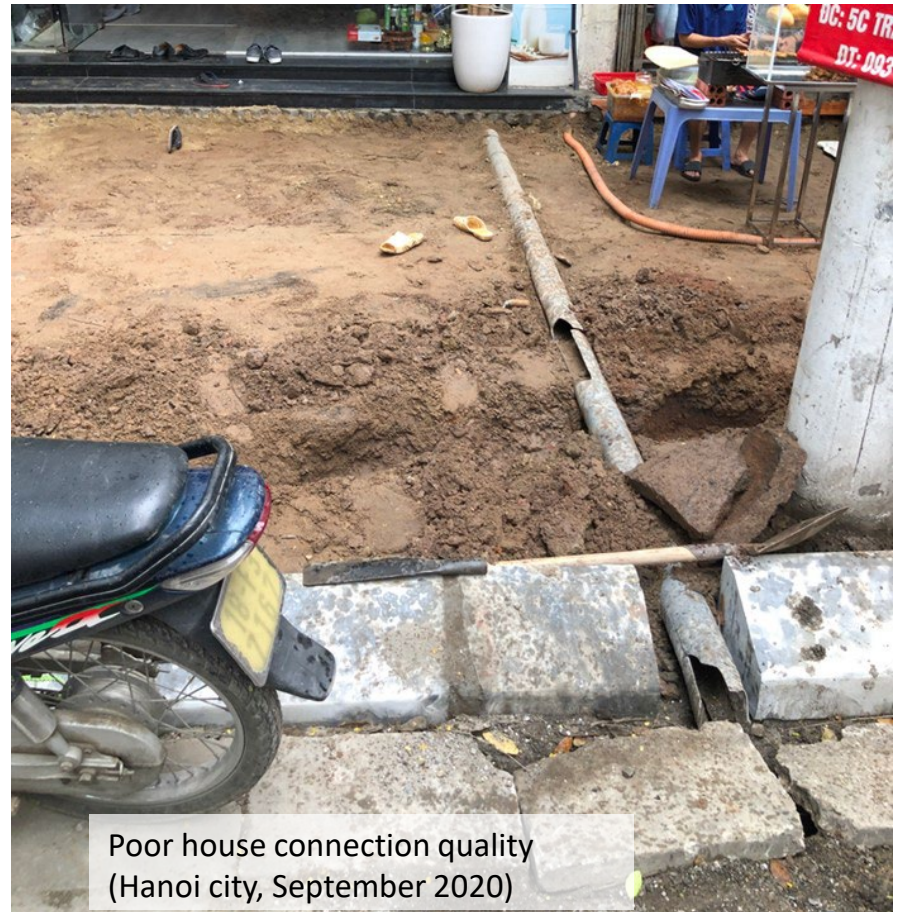
Expected to be accelerated to improve financial condition of sewerage management.

Issues of Sewer Networks and House Connection

➤ Existing sewer networks and house connection quality is poor, which cause wastewater infiltration into the ground and dilution of wastewater.



Street drain is used as a part of combined sewer network (Hanoi city, November 2020)

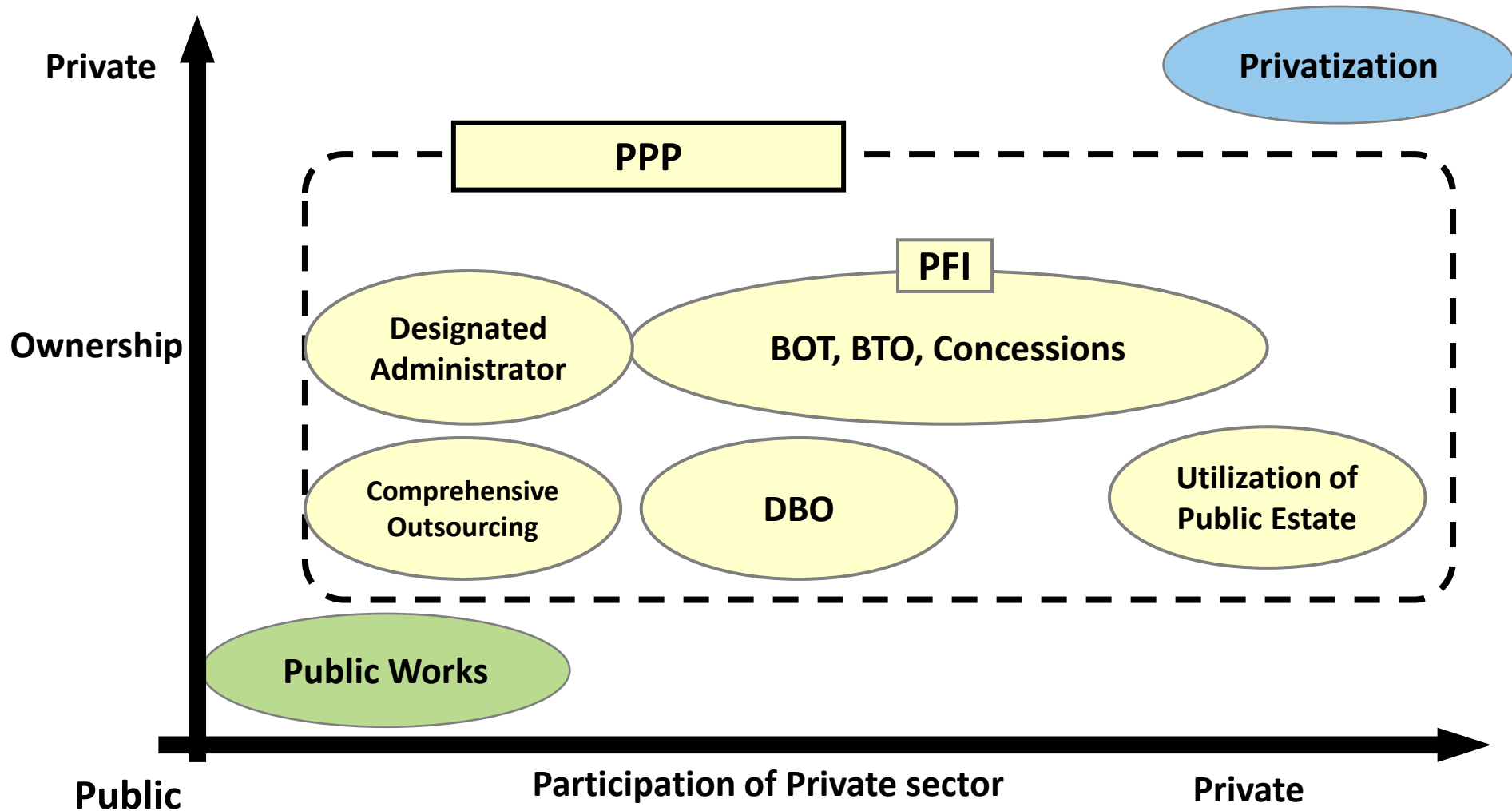


Poor house connection quality (Hanoi city, September 2020)

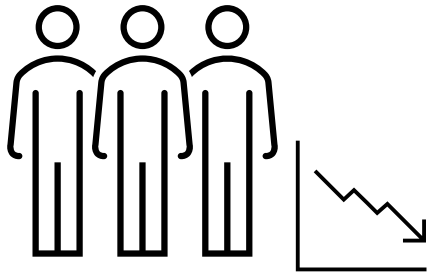


2. PPP projects in Japan

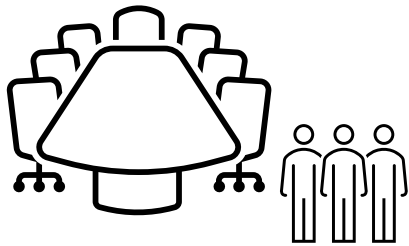
Forms of Private Sector Participation



Background of Promoting PPP Projects in Sewerage Sector in Japan

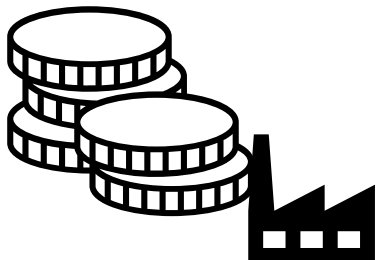


Decreasing Population and Tariff Income



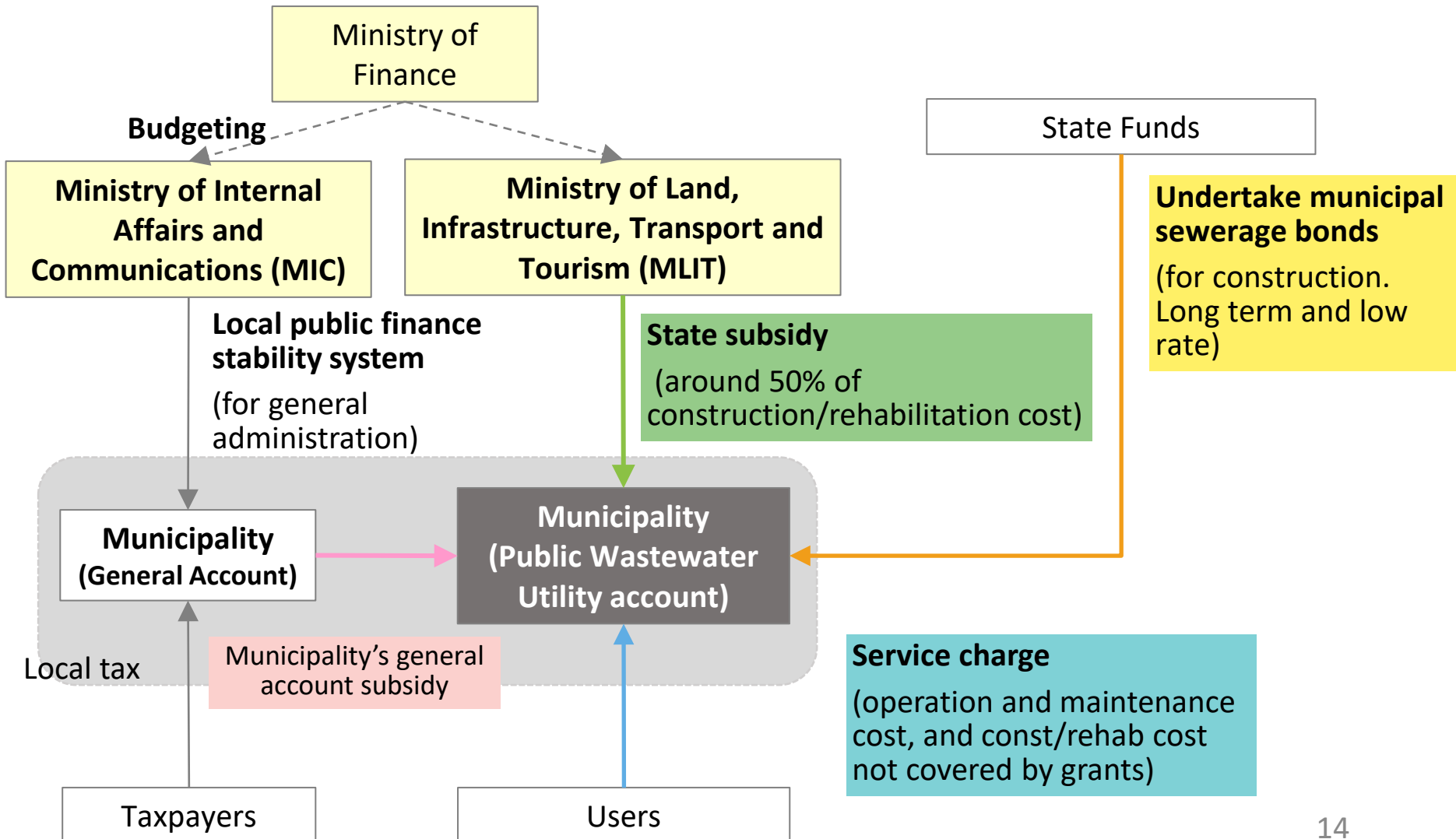
Decreasing Human Resources in
Municipalities

(Number of employees is currently about 2/3 of those in 1997)



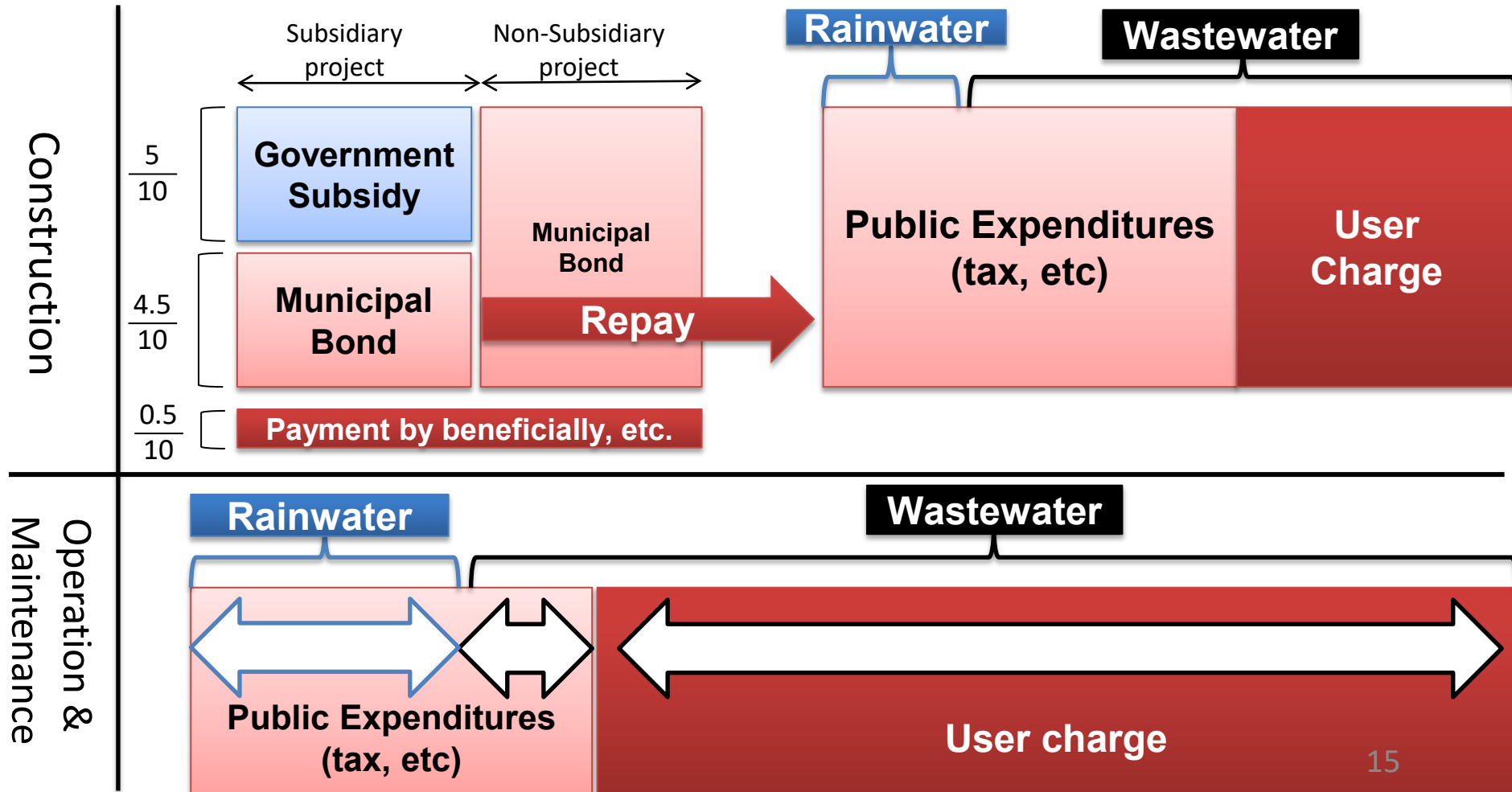
Large Demand for Replacement and
Rehabilitation of Deteriorated Pipelines
and Facilities

Funds for managing sewerage works in Japan



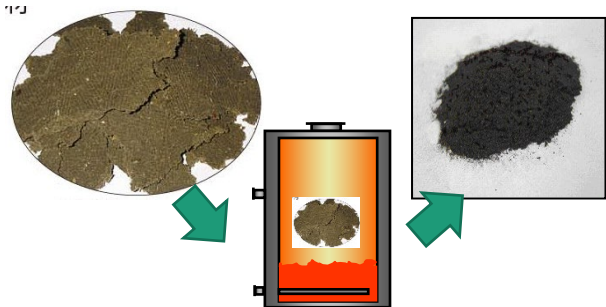
Financial system of sewage works in Japan

- Sewage works are implemented by the state and local budget, and user charge appropriately.



Current Situation PPP Projects in Sewerage Sector in Japan

(As of JFY 2018)	WWTPs (2,166plants in Japan)	Pumping stations (3,676stations in Japan)	Pipelines (470,000km in Japan)
Comprehensive Outsourcing	471 plants (252cities)	652stns (124cities)	29 (20Cites)
Designated Administration	60 plants (20 cities)		
DBO	24 plants (20 cities)	1 station (1city)	
PFI (Conventional)	11 plants (7 cities)		
PFI (Concession)	2 plants (2 cities)	2 stations (1city)	1 (1city)



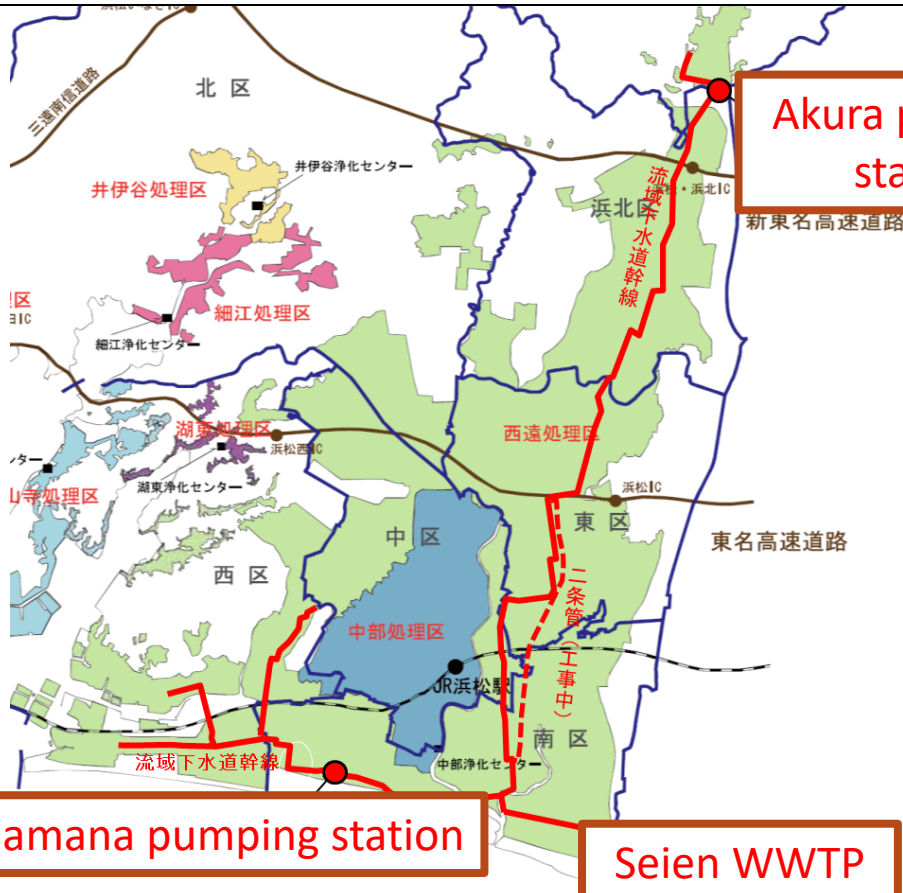
Example of DBO (Carbonized fuel production at Kosei WWTP in Shiga Pref.)



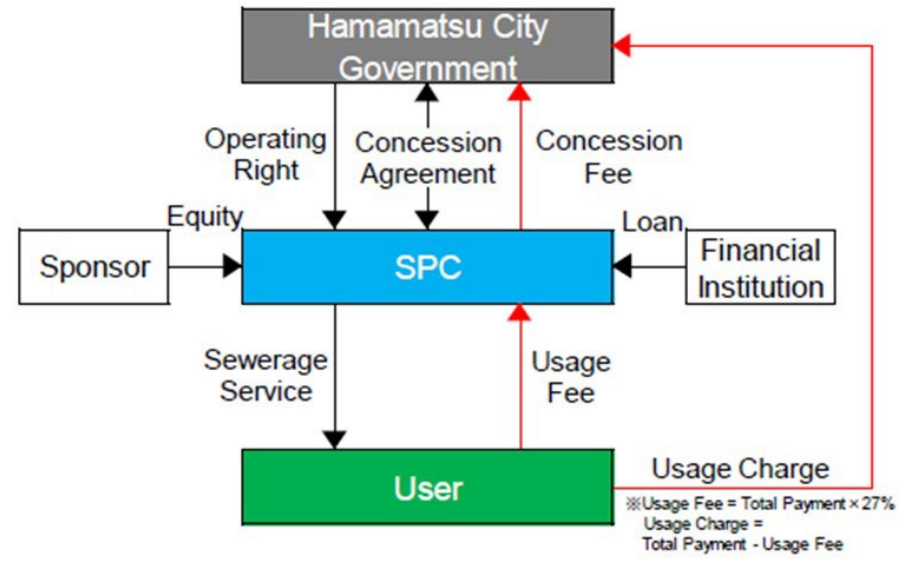
Example of PFI (Resource Recovering Project (Power generation and carbonized fuel production) in Toyohashi City)

Sewage concession in Hamamatsu City (SEIEN WWTP)

- A 20-year concession of the plant and 2 pump stations is **the first case of water sector concession in Japan.** (Concession operation started in April 2018)
- SEIEN WWTP covers the largest treatment area that treat 60% of wastewater in the City.



-Project Scheme-





3. Challenges for PPP sewerage projects in Vietnam

Vietnam needs more private investment in Sewerage sector.

But is it attractive for investors?

SÀIGÒN
GIẢI PHÓNG ONLINE

🏠 National Ho Chi Minh City International Business Health Education Sports Culture/art Law Science/technology

NATIONAL

Vietnam should use more PPP in wastewater treatment

SGGP - Monday, September 12, 2022 10:30

The promotion of public-private partnership (PPP) in wastewater treatment of Vietnam is a promising measure to address the limit of national budget and effectively mobilize rich resources in the private sector.



Nhiều Loc – Thi Nghe Wastewater Treatment in Binh Thanh District of HCMC

Saigon News
September 12, 2022
(<https://www.sggpnews.org.vn/national/vietnam-should-use-more-ppp-in-wastewater-treatment-101849.html>)

The Natural Resources and Environment Ministry has informed that the volume of household sewage in urban areas in Vietnam now is at 3,650m³ a day, yet only 12-14 percent of that amount is collected and treated properly. Among 846 urban areas nationwide, only 38 possess special facilities for sewage processing, accounting for 4.4 percent. The proportions of treated wastewater in Hanoi, HCMC, and Da Nang City are 22 percent, 21.2 percent, and 33 percent, respectively. 53 out of 69 sewage treatment facilities in Vietnam use the Official Development Assistance (ODA) capital and 2 follow the PPP model.

PPP projects in sewerage sector in Vietnam (as of 2021)

No.	Project name	Location	Total investment costs (billion VND)	Contract type
1	Wastewater treatment system of Tu Son town (phase 1) including Component 1 (wastewater treatment plant) and Component 2 (wastewater collection system)	Bac Ninh	902,730	BT
2	Construction of Van Mieu's reservoir	Bac Ninh	299,740	BT
3	Renovation and Upgrading the drainage system of Phu Hoa lake (Project proposed by the investor)	Binh Dinh	651	BT
4	Ha Thanh water treatment plant project (Project proposed by investor)	Binh Dinh	119,752	BOO
5	Wastewater treatment station in West Lake area	Ha Noi	600,280	BT
6	Yen So wastewater treatment station	Ha Noi	6,224.5	BT
7	Cau Nga	Ha Noi	N/A	BT
8	Project to solidify Hung Long Canal, Nga Son town, Nga Son District	Thanh Hoa	76,130	BT
9	Wastewater treatment station in Cua Lo town	Nghe An	59,440	BT
10	Tham Luong - Ben Cat canal wastewater treatment plant	Ho Chi Minh City	2,542	BT
11	Nam Viem (Phu My Hung) Wastewater treatment plant	Ho Chi Minh City	N/A	PPP
12	Canh Doi (Phu My Hung) Wastewater treatment plant	Ho Chi Minh City	N/A	PPP
13	Wastewater collection and treatment system in the tourist area north of Cam Ranh peninsula	Khanh Hoa	642.5	BT
14	Rainwater drainage system in Cam Ranh peninsula tourist area (phase 2)	Khanh Hoa	188.1	BT
15	Flood drainage canal in Hoa Lien commune area	Da Nang	N/A	BT
16	Upgrading centralized wastewater treatment plant in An Nghiep industrial park	Soc Trang	102,614	BOT

EX) Yen So WWTP in Hanoi



Source: Google Map



Photo by Tamoto (2015) 21

Ownership of sewerage facility

Japan	Vietnam
<p data-bbox="46 519 363 565">Sewerage Law</p> <p data-bbox="46 708 575 753">Article 3 (Management)</p> <p data-bbox="46 772 923 1072">1. Municipalities are to conduct installation, reconstruction, point repair, maintenance, and any other administrative operations of Public Sewerage Systems.</p>	<p data-bbox="985 519 1843 625">Decree on the drainage and treatment of wastewater (No. 80/2014/ND-CP)</p> <p data-bbox="985 708 1870 753">Article 11 (Investors in drainage system)</p> <p data-bbox="985 772 1870 1068">1. A competent People's Committee or a drainage unit shall be designated as an investor to construct drainage system with support from the State budget of the administrative division.</p> <p data-bbox="985 1086 1870 1192">4. Investors in drainage systems are their owners.</p>

Law on Public-Private Partnership Investment (Law No.64/2020/QH14)

Types of contracts of PPP (Article 3)

- BOT, BTO, BOO, O&M contract, BTL, BLT, Mixed contract

Investment sector of PPP projects (Article 4)

- Transportation;
- Power grids, power plants, except hydropower plants and those subject to the state monopoly requirement as provided in the Law on Electricity;
- Water resources and irrigation; clean water supply; water drainage and wastewater treatment; waste management and disposal;
- Healthcare; education – training;
- Information technology infrastructure.

Decree on the drainage and treatment of wastewater (No. 80/2014/ND-CP)

- **Pricing drainage service (Article 38)**

- In case drainage service price decided by the PPC is lower than that calculated taking into account accurate and full costs of drainage and wastewater treatment and reasonable profit level, the PPC shall compensate from local budget to ensure the legal rights and benefits of the drainage entity.

- **Formulating, assessing and approving the price of drainage service (Article 41)**

- (For drainage systems invested by the State budget)
The DOC shall take charge and cooperate with relevant agencies to formulate plans for pricing the drainage service, the DOF shall assess the plan and submit it to the PPC for consideration.
- (For drainage systems invested by other sources)
The owners of the drainage system shall formulate plans for pricing the drainage service, the DOF shall take charge and cooperate with the DOC to assess the plan and submit it to the PPC for consideration.

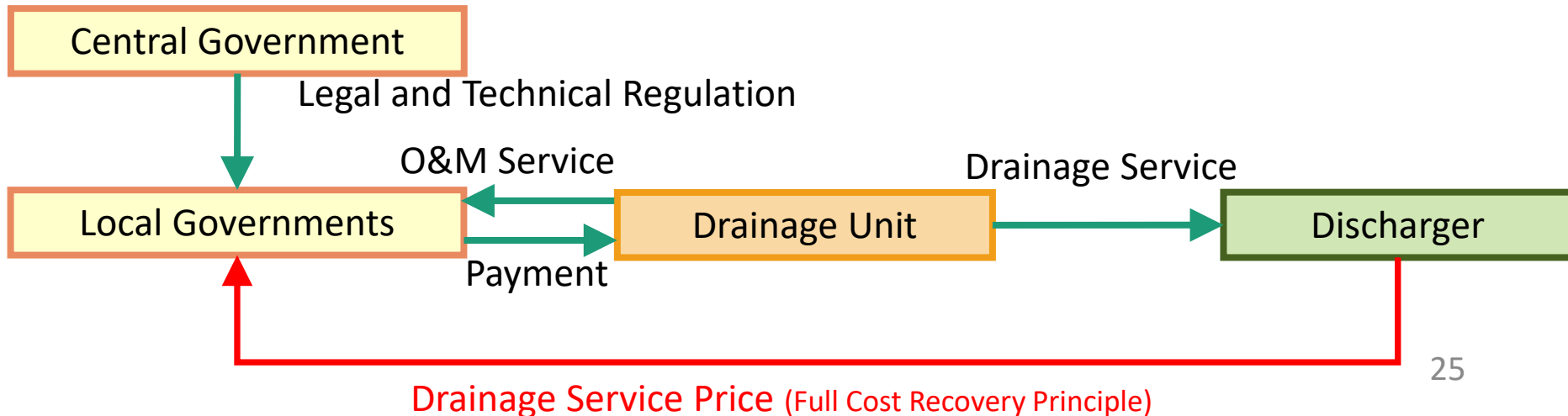
Drainage Service Price vs. Environmental Protection Fee

10% of Water Price

• Payment method for drainage service (Article 43)

- The entities providing the water supply service shall collect payment for drainage service according to the water bill from the discharging entities that use water from the common water supply system, and receive payment for collection service;
- The discharging entities that paid for drainage service are exempt from the fee for environmental protection according to current regulations on fee for environmental protection on wastewater.

Typical Structure in Sewerage Management by Using Drainage Service Price in Vietnam



Institutional Framework of Sewerage Sector in Vietnam

Tasks	Key central agencies	Key local agencies
Sector policies and regulation	<ul style="list-style-type: none"> ▶ Ministry of Construction (MOC) ▶ Ministry of Natural Resources and Environment (MONRE) ▶ Ministry of Science and Technology (MOST) ▶ Ministry of Finance (MOF) 	<ul style="list-style-type: none"> ▶ Departments of Construction (DOC) ▶ Departments of Natural Resources and Environment (DONRE) ▶ Departments of Science and Technology (DOST) ▶ Departments of Finance (DOF)
Master planning	<ul style="list-style-type: none"> ▶ Ministry of Construction (MOC) 	<ul style="list-style-type: none"> ▶ Provincial People's Committees (PPC) ▶ Departments of Construction (DOC) ▶ Departments of Planning and Investment (DPI) ▶ Departments of Finance (DOF)
State budget allocation and management	<ul style="list-style-type: none"> ▶ Ministry of Planning and Investment (MPI) ▶ Ministry of Finance (MOF) 	<ul style="list-style-type: none"> ▶ Departments of Planning and Investment (DPI) ▶ Departments of Finance (DOF)
Project preparation	<ul style="list-style-type: none"> ▶ Ministry of Planning and Investment (MPI) 	<ul style="list-style-type: none"> ▶ Departments of Planning and Investment (DPI)
Design and construction	<ul style="list-style-type: none"> ▶ Ministry of Construction (MOC) 	<ul style="list-style-type: none"> ▶ Provincial People's Committees (PPC) ▶ Departments of Construction (DOC)
Operation and management	<ul style="list-style-type: none"> ▶ Ministry of Construction (MOC) ▶ Ministry of Natural Resources and Environment (MONRE) 	<ul style="list-style-type: none"> ▶ Departments of Construction (DOC) ▶ Departments of Natural Resources and Environment (DONRE) ▶ Departments of Science and Technology (DOST)

Drainage Service Price

- “Drainage Service Price” which is stipulated in Decree 80 (2014) is gradually replacing “Environmental protection fee” to realizing “Polluters pay principle” and “Full cost recovery.”
- For example, drainage service price in Ho Chi Minh City will increase up to 30% of drinking water price in 2025.
- According to survey by JICA expert and MOC in 2020, 38% (24/63) of local governments have issued their Drainage Service Prices, including Ho Chi Minh City and Hai Phong. (The others still charge only 10% of the drinking water price.)
- Application of Drainage Service Price is expected to improve financial conditions.

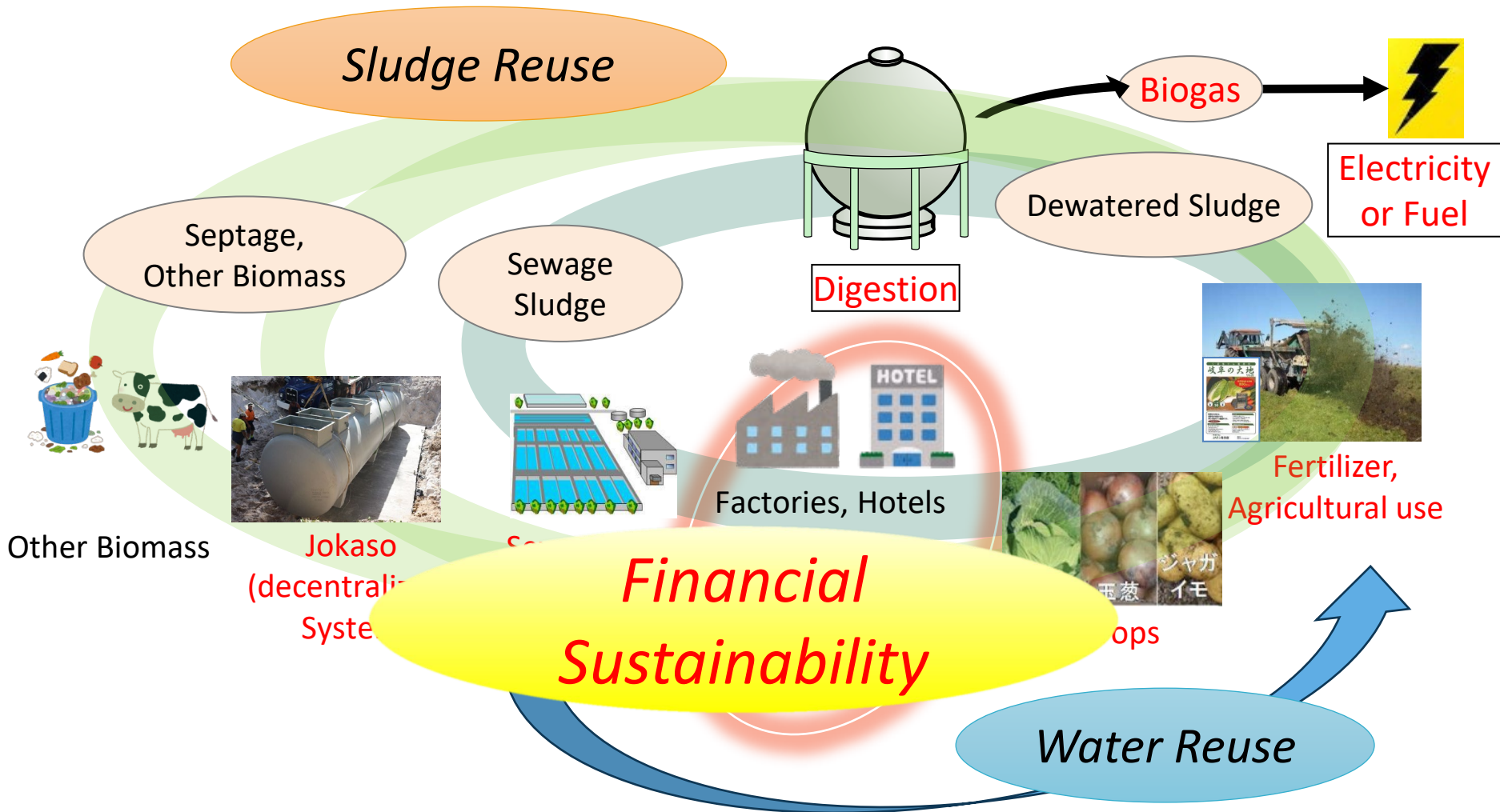
Example: Drainage Service Price in Ho Chi Minh City

Item	2022	2023	2024	2025
Average Drinking Water Price Vietnamese Dong/m ³ (USD/m ³)	9,590 (0.42)	10,165 (0.44)	10,775 (0.47)	11,422 (0.50)
Drainage Service Price/Drinking Water Price	15%	20%	25%	30%
Average Drainage Service Price Vietnamese Dong/m ³ (USD/m ³)	1,439 (0.06)	2,033 (0.09)	2,694 (0.12)	3,426 (0.15)

Conclusion

- At this moment, the followings are risk for investors and should be addressed to promote PPPs in Vietnam, whereas there is large demand for wastewater management;
 1. Lack of regulations or toolkits for PPPs
 2. Lack of guidance on management of fiscal risks
 3. Limited capacity of both central and local governments (no experience in sewerage sector after promulgation of new PPP law)
 4. **Low tariffs in wastewater**
- Besides the promoting private investment, there are many problems in sewerage works in Vietnam in terms of technical and management aspect.
- International assistance is still needed to breakthrough above issues.

Ideal Future Circulation in Wastewater Management for Sustainable Society



Thank you for your attention!



Ha Long Bay, Vietnam (2019)