

METI's International Cooperation Policies on Water Infrastructure Development

**Office for Promotion of International Project,
Infrastructure System and Water Industry
Manufacturing Industries Bureau**

Ministry of Economy, Trade and Industry (METI)

I . Status of Overseas Water Business Development by Japanese Companies

II . METI's Policies on Water Infrastructure Development

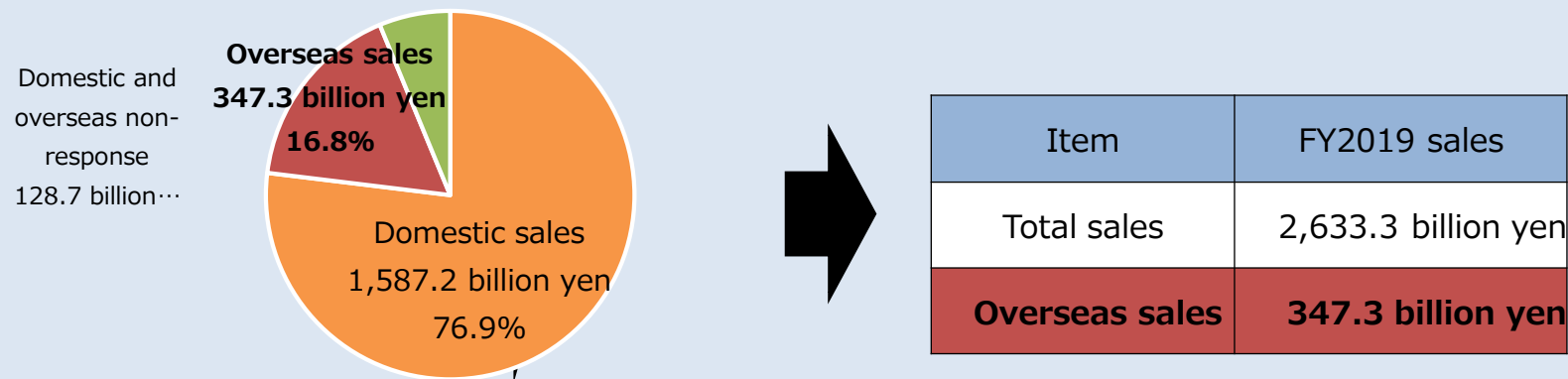
1. Sales of overseas water business by Japanese Companies

A questionnaire survey was conducted to understand the status of overseas water business entry and orders received, etc. by Japanese companies.

Sales of companies involved in overseas water business in FY2019

- The number of companies surveyed was 266, and the total sales of 73 companies that responded to the questionnaire about their sales in FY2019 were 2.06 trillion yen.
- Among these, overseas sales were accounted for 347.2 billion yen, or 16.8% of the total.

【Fig.4 Sales of Companies Involved in Overseas Water Business (FY2019)】



<Outline of the survey>

- Implementation period: September to December 2020.
- Survey year: FY2019 (April 2019 to March 2020).
- Survey target: Japanese companies operating overseas water businesses.
- Survey method: Questionnaire survey and hearing survey through interviews (including web-based interviews) were conducted with the target companies.

【Fig.5 Existing surveys and results for the current fiscal year】

Item	FY2016	FY2017	FY2018	FY2019
Number of companies surveyed	99	97	148	266
Number of companies surveyed	99	97	134	266
Number of responding companies	55	47	94	81
Total number of companies	55	51	98	81
Overseas sales	287.8billion yen	248.4billion yen	331.3billion yen	347.3billion yen

Source: "FY2003 Set of Surveys on the Potential for Improving the Efficiency of Waterworks Facilities (Research and Study on Overseas Expansion of the Water Business and Measures to Understand Its Accompaniment) (March 2020)" (Ministry of Health, Labor and Welfare)

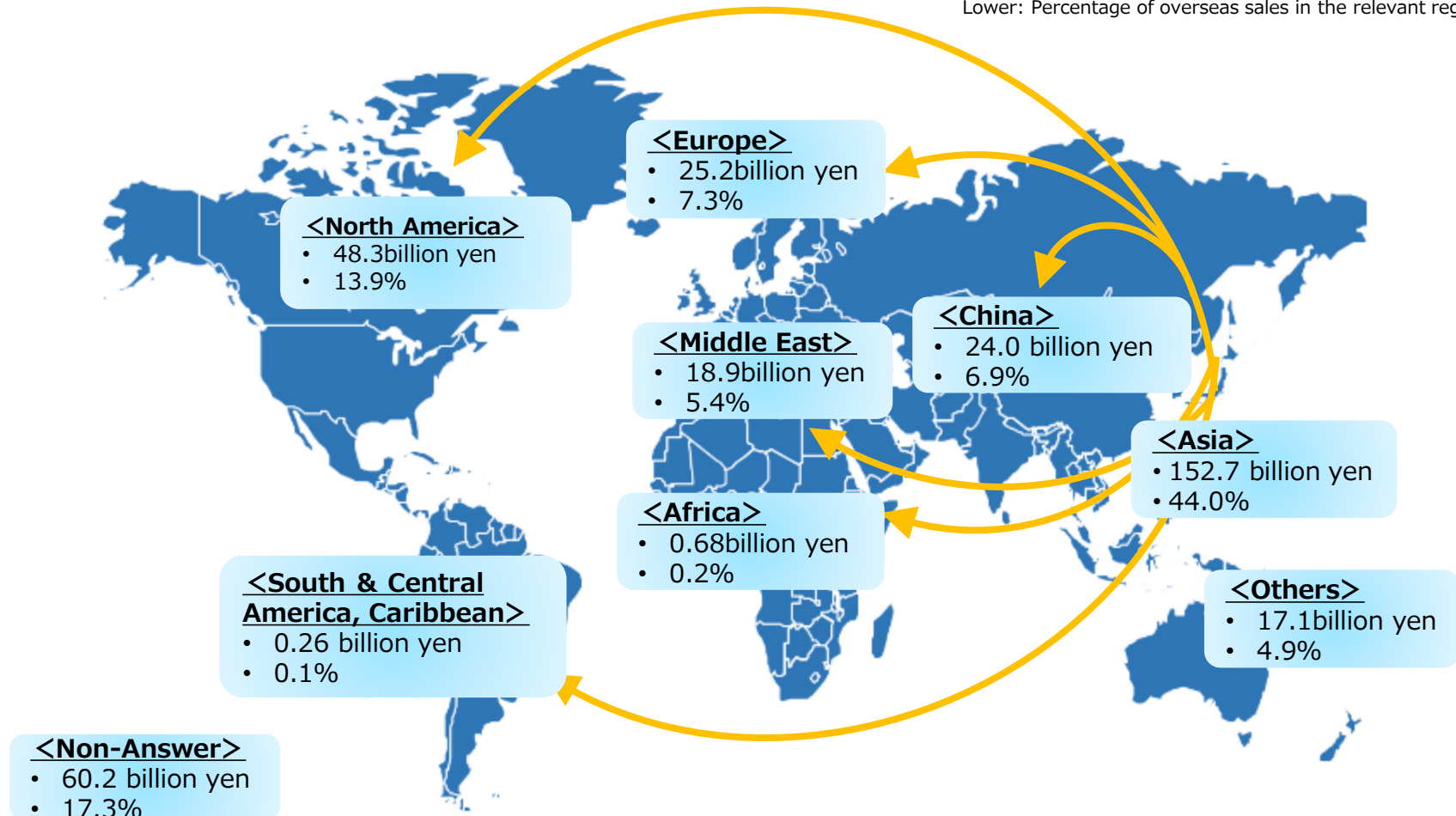
2. Sales of Japanese Companies by Region (2019)

- Breaking down the overseas sales of Japanese companies by region, sales to Asia excluding China accounted for 152.7 billion yen, or 44.0% of the total.
- This was followed by North America at 48.3 billion yen (13.9%), Europe at 25.2 billion yen (7.3%), and China at 24 billion yen (6.9%).

(Figures)

Upper: Overseas sales of the relevant region










Lower: Percentage of overseas sales in the relevant region



3. Sales of Japanese Companies by Product, Technology, and Service

- Looking at the domestic and overseas sales of Japanese companies by product, technologies and services handled, "chemicals, filtering materials, pipe materials, equipment, and devices" accounted for the largest share of both domestic and overseas sales.
- In Japan, the ratio of "plant engineering" and "electrical equipment" is the next largest.
- As for overseas, "plant engineering" and "membrane" followed.

Unit : billion yen

		FY2016	FY2017		FY2018		FY2019	
		55 companies only Total	Domestic	Overseas	Domestic	Overseas	Domestic	Overseas
	Membrane	44.2	17.7	13.2	5.5	28.4	6.7	11.6
	Chemicals, filter materials, pipe materials, equipment, and devices	731.4	381.9	71.1	150.6	46.4	525.0	129.3
	Electrical equipment	61.1	26.4	3.5	30.4	4.0	160.3	1.9
	Plant Engineering	298.7	170.3	33.0	94.9	4.3	277.8	86.9
	Construction and civil engineering	0	16.1	4.0	14.5	0.035	20.4	1.6
	Operation, maintenance, and other services	363.5	109.3	2.3	22.1	1.3	55.2	6.0
	Consulting Services	0	0	0.02	0.08	0	42.3	4.7
	Investments	0	0	7.3	0	2.1	0	0
	Classification not answered	27.6	442.0	114.0	803.3	231.2	499.5	105.4

* For data prior to FY2018, refer to previous surveys.

4. Market Share of Japanese Companies by Business Sector of Overseas Water

- Both the water supply and sewage sectors have seen an increase from the previous year's survey. While most of the projects were in Asia, there were also some projects in Europe, North America, and Africa. As for the projects in the water supply and sewage sector, some say that it takes time from project formation to order receipt due to the influence of local government policies.
- In the industrial water and others, demand was seen for water treatment and ultrapure water supply for semiconductor and electronic component-related factories in Asia.

		FY2016 (55 companies)	FY2017 (51 companies)	FY2018 (70 companies)	FY2019 (73 companies)
Water	Overseas Market Size	22,394.0 billion yen	23,875.8 billion yen	24,286.2 billion yen	24,424.2 billion yen
	Overseas sales of Japanese companies	48.3 billion yen	38.7 billion yen	6.2 billion yen	11.1 billion yen
	Share of Japanese companies	0.22%	0.16%	0.03%	0.05%
Waste water	Overseas Market Size	24,192.7 billion yen	26,689 billion yen	27,965.4 billion yen	28,430.4 billion yen
	Overseas sales of Japanese companies	18.1 billion yen	14 billion yen	15.6 billion yen	31.4 billion yen
	Share of Japanese companies	0.07%	0.05%	0.06%	0.11%
Industrial water and others	Overseas Market Size	15,368.1 billion yen	16,461.5 billion yen	17,415.9 billion yen	18,125.4 billion yen
	Overseas sales of Japanese companies	129.5 billion yen	60.1 billion yen	29.7 billion yen	132.9 billion yen
	Share of Japanese companies	0.84%	0.36%	0.17%	0.73%
Seawater Desalination	Overseas Market Size	659.1 billion yen	763.4 billion yen	782 billion yen	889.3 billion yen
	Overseas sales of Japanese companies	16.5 billion yen	4.5 billion yen	47.6 billion yen	22.2 billion yen
	Share of Japanese companies	2.50%	0.59%	6.09%	2.49%
Business Field Unknown		75.4 billion yen	131.1 billion yen	218.6 billion yen	149.7 billion yen

Data for FY2018 and earlier referred to the past surveys.

The results for "Industrial Water and Others" and "Seawater Desalination" vary widely depending on the existence and scale of projects at the responding companies.

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1. Building strong relationship through top sales, intergovernmental consultations and the stable implementation

- Work on demand development that clarifies the composition of package projects including operation and management, as well as fields and markets by utilizing various policy tools (top sales, intergovernmental dialogue, project feasibility study (F/S), human resource development, etc.).



Kuwait-Japan Policy Dialogue



MOU ceremony with Saudi Arabia

Minister Kajiyama & H.E. Dr. Cham Prasidh,
Senior Minister, Ministry of Industry and Handicrafts, Kingdom of Cambodia

2. Project formation through overseas demonstration projects

- Some demonstration projects aimed at commercialization are underway, for example in the fields of seawater desalination and advanced wastewater treatment technologies, in which Japanese companies have technological superiority.



Saudi Arabia

- Energy Saving Seawater RO System
- High Efficient RO Membrane
- Low Pressure Multi-Stage Seawater Desalination System
- Chemical-Free Pretreatment Process

South Africa

- Energy Saving Environmentally Friendly Desalination Technology
- Sea Water Desalination System with an Integrated Water Reuse Process



3. Project formation utilizing the know-how and achievements of local governments and the relationship of trust with locals

- Utilizing the know-how and achievements of local governments with abundant experience in domestic water business is effective in responding to package projects including operation and management according to the needs of the partner countries.
- Support water supply companies funded by Japanese local governments to participate in overseas business development.



Kitakyushu city's original technology, U-BCF(Upward Bio Contact Filtration) installed in Hai Phong City, Vietnam

Step1	【JICA Grassroots Cooperation (2010~2012)】 Installed U-BCF practical plant
Step2	【Small Purification Plant (2013)】 Hai Phong installed U-BCF by their own budget
Step3	【Major Purification Plant (100Km ³ /day)】 Install U-BCF with Japan's financial
Step4	【Install Purification Plants in 6 cities in Vietnam】
Future	Widely used in S.E. ASIA

U-BCF installed in Hai Phong City, Vietnam

<Examples> Overseas water projects by local governments

● Support for waterworks project in Phnom Penh, Cambodia (Kitakyushu City)

- Kitakyushu City began supporting waterworks projects in 1999.
- With the guidance of experts sent by Kitakyushu City, the non-revenue water rate in Phnom Penh has been reduced from approximately 72% to less than 9% (known as the "Miracle of Phnom Penh"). Besides Phnom Penh, Kitakyushu City has been involved in the formulation of basic waterworks plans for major cities.
- In February 2017, the city concluded a memorandum of understanding for technical cooperation in the sewerage sector in Phnom Penh.

● Support for waterworks project in Yangon City, Myanmar (Tokyo Metropolitan Government)

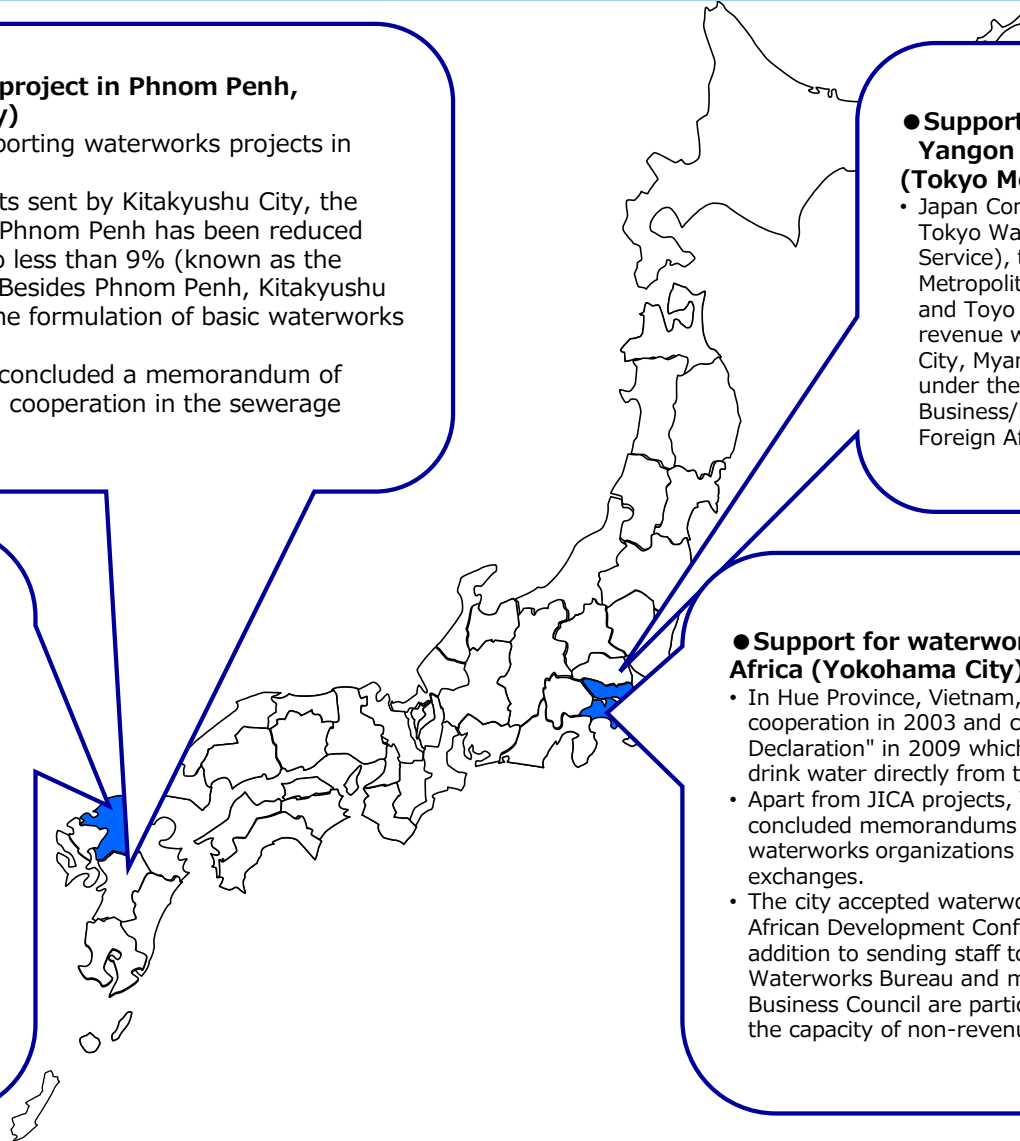
- Japan Consortium LLC, a joint venture between Tokyo Water (formerly Tokyo Waterworks Service), the supervisory body of the Tokyo Metropolitan Government's Waterworks Bureau, and Toyo Engineering, is implementing a non-revenue water countermeasure project in Yangon City, Myanmar. This project is being carried out under the scheme of "Grant Aid for Business/Management Rights" of the Ministry of Foreign Affairs of Japan.

◆ Cooperation in waterworks sector in Yangon City, Myanmar (Fukuoka City)

- In December 2019, Fukuoka City signed a Memorandum of Understanding for Cooperation in the Water Supply Sector to improve the Yangon City Water Supply Project. As an own project of Fukuoka City, technical staff from Fukuoka City is sent to Yangon City for a long term to understand local issues and needs and to follow up on the activities, thereby building a foundation for the Japanese government and Fukuoka City to be involved in the project formation.

● Support for waterworks projects in Vietnam and Africa (Yokohama City)

- In Hue Province, Vietnam, JICA began grassroots technical cooperation in 2003 and contributed to realize the "Safe Water Declaration" in 2009 which allows people in the entire province to drink water directly from the tap.
- Apart from JICA projects, Yokohama City has independently concluded memorandums of understanding with several waterworks organizations in Vietnam to conduct technical exchanges.
- The city accepted waterworks engineers from Africa led by the 4th African Development Conference in 2008 as an opportunity. In addition to sending staff to the Republic of Malawi, the Yokohama Waterworks Bureau and members of the Yokohama Water Business Council are participating in JICA's project to strengthen the capacity of non-revenue water countermeasure.



4. Establishment of public-private task force and dispatch of public-private joint mission

- Established a "Public-Private Task Force for Overseas Water Business " to promote collaborative efforts between public and private sectors in Japan.
- Collect information on related legal systems in the partner country/region, find local partners, etc.
- Promote the building of relationships with countries/regions that are willing to utilize the know-how of private companies through intergovernmental dialogue and public-private missions.



Business delegation from Japan to Myanmar



Visit to water purification plant

5. Promotion of effective introduction of Japanese technologies

- There are many Japanese technologies that can contribute to solving the issues that the partner countries face in water infrastructure development. While taking advantage of such technologies, working on proposals under the efforts of both public and private sectors is effective to meet the needs of the partner countries.



Energy saving

- Reduce maintenance costs including power consumption



Space saving

- Address issues of insufficient land availability due to urbanization



Ease of maintenance

- Respond to the shortage of personnel of the executing agency



Durability

- Reduce investment costs throughout infrastructure life cycle

<Examples> Overseas expansion of Japan's technologies

● Order received for the largest water purification plant renewal project in the Philippines

JFE Engineering received an order from Maynilad Water Services for the renewal of the La Mesa 1st Water Purification Plant in Quezon City, Philippines. This water purification plant is the largest in the Philippines with a capacity of 1.5 million m³/day. The EPC of the facility was carried out by a joint venture with local Sta. Clara International Corporation. It was constructed in Design-Build.



(Source) JFE Engineering

Success factors

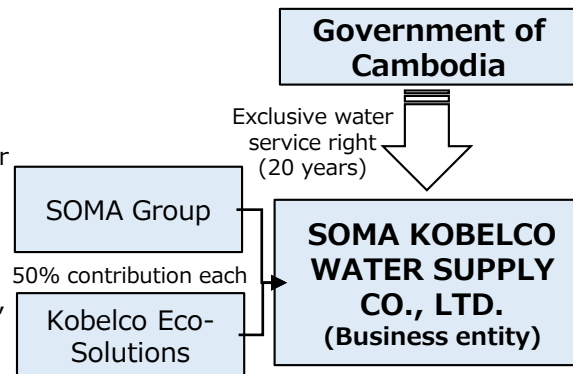
Partnership with a local company

Flexible design according to Design-Build

Localization by hiring local staff

● Entry to the Waterworks Project in Cambodia

SOMA KOBELCO WATER SUPPLY, a joint venture between Kobelco Eco-Solutions and SOMA Group, a private Cambodian company, has acquired the exclusive waterworks project rights for Koh Dach in Phnom Penh City and Kaôh Ôknha Tey in Kandahâr Province. The water supply will start in December 2019 for a population of approximately 20,000 people and commercial facilities. The term of the project is 20 years. This is an integrated project that includes EPC of waterworks facilities, test run operation, raw water intake, purification of drinking water, water distribution to each district, meter reading, and fee collection.



Success factors

Partnership with local companies

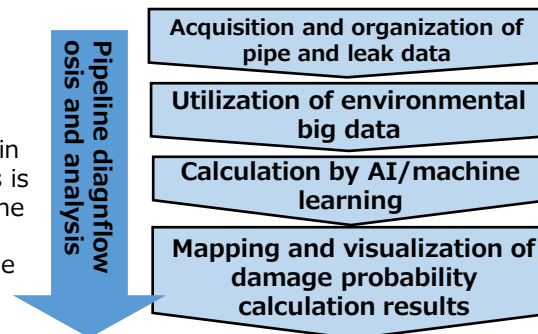
Application of superior technology (power saving)

Recruitment from local waterworks public corporation

Overwhelming advantage of localization technology by hiring local staff

● Diagnosis of water pipe deterioration utilizing DX

Fracta Japan has developed a technology to diagnose the deterioration of water pipes using AI. The company was established in the United States, although the founder is Japanese. Kurita Water Industries holds a majority stake in the company. Although deterioration of aging water pipes is a growing problem in Japan and overseas, inspection of the water pipes requires a huge amount of time, manpower, and money. The company has a proven track record in the United States and Japan with its technology for speedy analysis using AI and ML algorithms.



Success factors

Labor saving through DX

Adapting to the needs of the times and local needs

Utilization of existing (public) data

Affinity with existing frameworks