International City Network and Public-Private Cooperation for Urban Water-Environment Management: A Study of Japanese Public Water Services' Overseas Expansion **Naoki Fujiwara**

Slide3: Urbanization has progressed in parallel with rapid economic development in Asia. As such, people living in the region's megacities face severe urban environmental problems, especially with their water environment. These cities must develop the infrastructure to provide clean water and process sewage in densely populated areas.

Slide4: Since the mid-1980s, liberalization has led to numerous water supply reforms, allowing for more privatized and commercialized services, thus initiating the economic globalization process (Bakker 2003; 2007; Swyngedouw et al 2002). The territorial expansion of municipally owned water companies in some countries can be observed as a form of urban entrepreneurialism (Furlong 2015).

Slide5: And now municipally owned companies, those are largely motivated by external factors such as customer requests and opportunities to contribute to environmental sustainability. Their export experiences are influenced by their municipal ownership, technology, and the institutional contexts within which they operate (Kanda et al 2016).

Slide6: Japan's water supply and sewerage services are managed by municipalities as a public service. However, their revenues are shrinking in response to a decreasing birthrate, an aging population, and the water-conservation movement. Therefore, the Japanese government is focused on municipal water services as a new export industry. Expanding municipal water services abroad contributes to solving Asian cities' urban environmental problems through international cooperation and sustainable management of their public water services.

Slide7: In this study, we investigated the plan to expand Japanese public water services overseas as an effort to improve the living environment in developing Asian countries and to advance the sustainability of public water services. The remainder of the paper presents the research methodology and analysis, followed by a

discussion on the results and a conclusion. The research methods included scrutinizing preliminary research, conducting case studies through text analysis of materials issued by national and local governments, and conducting interviews with municipalities.

Slide8: We examined urban municipal water services in four cities: Tokyo, Yokohama, Osaka, and Kitakyushu. Tokyo, Yokohama, and Osaka were selected because they represent the areas with the highest populations in Japan. As an industrial city, Kitakyushu has a long history of development, and from preliminary surveys, is recognized as one of the Japanese cities most actively engaged in the overseas development of environmental technology.

Slide9: Table summarizes the survey results from the investigation of qualitative case studies based on four municipalities and their public water service expansions overseas. I will explain each case.

Slide10: Case study 1

In January 2010, the Tokyo Metropolitan Government formulated the 2010 Tokyo Waterworks Management Plan for the period from FY 2010 to 2012. This plan indicated that Tokyo Suido Service Co., Ltd., in which the Tokyo Metropolitan Bureau of Waterworks invests 51%, contributed its high-level water technology and operation expertise on an international level, while the Tokyo government dispatched survey teams abroad to promote Tokyo Waterworks' technology and expertise. In October 2011, Tokyo Suido Service, a Japanese water treatment company, and the Hanoi City Waterworks Public Corporation established a joint venture company that was responsible for a project to construct and maintain a water purification plant with a daily volume of 150,000 tons in Hanoi City, Vietnam.

Slide11: Tokyo Suido Service established its wholly owned subsidiary, Tokyo Waterworks International Co., Ltd. in April 2012 and an affiliated company, Tokyo Waterworks International Taiwan Co., in December 2012, thus strengthening the foundations for overseas project promotions. Tokyo Suido Service has made efforts to understand the recipient countries' problems and needs by actively participating in

international conferences, exhibitions, and field surveys to pursue dialogue with waterworks operators in each country and by continuing to provide training for overseas trainees in recipient countries and in Japan.

Slide12: Case Study 2 Yokohama's medium-term, four-year plan implemented from 2010 to 2013 indicated that, to stimulate the regional economy, the Yokohama City Government supported business development efforts of enterprises in Yokohama City to expand urban infrastructure technology overseas. In January 2011, the Yokohama Government. announced a public-private partnership venture to promote international technical cooperation. The Yokohama Partnership of Resources and Technologies (Y-PORT) project was designated to help solve urban problems in emerging countries as a matter of social responsibility and to revitalize the city's economy. In 2010, the YCG established the Yokohama Water Co., Ltd., in which they had 100% stake, to promote orders from outside the region,

Slide13: And the "Yokohama Water Business Association," a PPP with 133 companies and organizations, to share information, exchange views, and conduct joint promotions.

Slide14: In 2015, the International Water Association Strategic Asset Management Conference was held in Yokohama City. Executives involved in Asian water utilities and water administration were invited to the Executive Forum for Enhancing Sustainability on Urban Water Service in the Asian Region. The purpose of this forum was to verify efforts to improve water utilities in each country, and to share knowledge, technology, experiences, and know-how for solving future problems.

Slide15: The Osaka City Economic Growth Strategy announced in 2011indicated that by packaging the city's water, sewerage, and environmental technologies and strengthening relationships with Osaka and Kansai companies with their element technologies, the Osaka City Government contributed to solving overseas water and environmental problems and supported the expansion of Osaka and Kansai economic business opportunities.

Slide16: To achieve the above objectives, the City Government established the Osaka Water & Environmental Solutions Association in 2011 with the Kansai Economic Federation and the Osaka Chamber of Commerce and Industry. The association's aims are to solve diversified water and environmental issues by utilizing the administration's considerable experience and advanced technologies from the private sector.

Slide15: OWESA has two main activities. The first includes the following promotional activities: Convey information about Osaka-Kansai companies' technical capabilities to overseas entities; provide business-matching opportunities that will lead to orders abroad through joint exhibitions at international trade fairs such as Singapore Water Expo; hold seminars at home and abroad; and accept technical trainees and visits from overseas. The second activity is to support findings and formulate overseas projects through Osaka's international city network, which includes business partner cities, and implement projects through collaboration between the private and public sectors. This activity involves identifying local water and environmental problems through intercity diplomacy and technical exchanges between Osaka City and overseas municipalities, then formulating business projects to resolve such problems with the participants' agreement.

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Slide18: In 2011, the Kitakyushu City Government formulated the Kitakyushu Municipal Water Service Mid-term Management Plan, which indicated the following policy targets: "Water service at inexpensive prices," "water service to promote the environmental model city," and "water service to contribute to the world." The KCG established the "Asia Low Carbonization Center" as an affiliated organization in 2010. The purpose of the center is to concentrate Japan's environmental technologies in the Kitakyushu region, to target the remarkably developed Asian region, and to effectively drive technology innovation through the benefits of accumulation. To encourage the development of environmentally conscious Asian cities, the center promotes the overseas expansion of packaged infrastructure services according to the needs of partner cities, as this creates opportunities for companies to develop business within the city's jurisdiction.

Slide19: In 2010, the Kitakyushu Government organized the "Kitakyushu Overseas Water Business Association," a platform consisting of public and private sector entities, including 57 companies, academic institutions, and the national government, all cooperating to expand water and sewerage services overseas.

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Slide21: As a result of the research, we first identified the overseas expansion of public water services as a collaborative model, based on international city networks, to solve urban problems. With national governmental support, major municipal water service providers in Japan have aimed to expand their businesses abroad to achieve regional economic development, relying on the international city network's solidarity and trust to reduce the transaction cost of international water-related project development.

Slide22: Second, we clarified that the public-private cooperative platforms established by the municipalities' leaderships enhance the accountability and transparency of the overseas public water services expansion projects.

Slide23: Municipalities hold themselves accountable to be fair to citizens and stakeholders. Serving as intermediaries, such public-private platforms not only develop the projects' implementation capacities but also strengthen their accountability and transparency when it comes to sharing information about the water-environment problems in each partner city and selecting partner companies for international public water service expansion projects.

Slide24: Third, we found that the international city networks the municipalities built are evolving from one-to-one mutual networks to multilateral networks. To date, municipalities have developed international sister-city networks centered more on cultural and educational administrative exchanges. However, in recent years, more pragmatic "city networks" or "transnational municipal networks" have emerged with city liaisons focused on problem-solving (Kern & Bulkeley 2009). Municipalities are realizing that it is efficient to develop mutual projects and participate in international associations or city organizations for specific purposes. Under urban entrepreneurialism (Furlong 2015) and smart city regionalism (Herrschel 2013),

municipalities even organize international meetings or conferences at which they seek business partner cities, promote their environmental technologies to their region, and enhance their brand images as regional technology hubs.

Slide25: Water is indispensable to humans, as it is necessary for livable and healthy environments. Water services need to be developed from a long-term perspective with emphasis on public interest. In this context, the overseas expansion of Japanese public water service enterprises, as based on solidarity and trust between the municipalities, is a unique initiative to promote international water service standardization and technology development. It is assumed that this may lead to a new form of international urban water service cooperative governance, which is different from the previous model of complete privatization or concession. Future research requires more comparable analysis on the management of PPP platforms, as well as the participation of municipal owned companies in the project development process so that more empirical analyses can be conducted.