

# Current Status and Challenges of Community Energy Business Entities Through Wide-Area Cooperation\*

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**Abstract:** This paper examines the relationship among stakeholders and regional energy governance in municipal energy projects from the perspective of wide-area cooperation and wide-urban areas, the position of municipal energy projects in the SDGs, and in particular, whether they can contribute to the realization of the SDGs through wide-urban area cooperation. Community Energy Business Entities (CEBEs), which have been expanding in Japan recently, are expected to lower electricity prices and promote local production and consumption of energy. Through these community-based electricity projects, local governments and local companies are working together to promote initiatives that will contribute to the regional economy and become a new player in the low-carbon society (reduction of CO<sub>2</sub> emissions). As a case study, this paper discusses the current status and challenges from the above perspective, focusing on the case of CEBE developed through wide-area cooperation in the Nishi-Kyushu Sasebo Wide Urban Area, which was started mainly by Sasebo City and surrounding municipalities in Northern Nagasaki, Japan.

**Key words:** regional cooperation, community energy business entities, Nishi-Kyushu Sasebo Wide Urban Area, governance, stakeholder

**JEL codes:** R, R1

## 1. Introduction

Since the Fukushima Daiichi Nuclear Power Plant in the Great East Japan Earthquake of March 11, 2011, discussions on shifting energy sources have been accelerated, and policy factors such as the Feed-In Tariff (FIT) system and the progress of electricity deregulation have led to active discussions on the introduction of renewable energy. In recent years, with the model of *Stadtwerke*, a public utility corporation that manages comprehensive infrastructure in Germany, there have been movements to establish energy businesses in Japan, called “Local Power”, “Community Energy Business Entities (CEBEs)”, and “Community Power” such as those of Miyama City in Fukuoka Prefecture. The reason for this trend is that companies in charge of renewable energy projects in

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\* This research is part of the results of “Research on the Expansion of Renewable Energy and Regional Revitalization in the Kyushu Region (Fundamental Research C)”, which was supported by JSPS Grants-in-Aid for Scientific Research JP1719K1249.

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the region, under the leadership of the local government or with the participation of various stakeholders, purchase electricity and sell it to public facilities and households, aiming for “local production for local consumption” for sustainable local economic circulation (Inagaki & Ogawa, 2020).

On the other hand, in Japan, municipalities are facing the challenges of “city management” and “local government management” in terms of how to control costs and increase revenues in the face of a declining birthrate, aging society, and declining population, as well as severe financial conditions throughout the national and local governments.

This paper examines the relationship among stakeholders, regional energy governance, and the position of SDGs in municipal energy projects from the perspective of municipal wide-area cooperation. First, this paper examines the background of not only the management of renewable energy projects by multiple stakeholders, community power, and community energy business entities (CEBEs), but also the energy projects conducted by inter-municipal cooperation and wide-area urban areas. Secondly, this paper summarizes how the *Stadtwerke* as a municipal energy utility should be understood in relation to the discussion of municipal wide-area cooperation in Japan. Following these discussions, we will discuss the relationship among stakeholders and regional energy governance in regional energy projects from the perspective of wide-area urban areas and wide-area cooperation, the position of the *Stadtwerke* and in the context of the discussion of the SDGs from the perspective of regional development, and the role of wide-area energy projects in the SDGs. Finally, we will discuss whether this wide-area cooperation initiatives can contribute to the realization of the SDGs. Based on these discussions, this paper shows the current status and challenges of wide-area cooperation, focusing on the case of the Nishi-Kyushu Sasebo Wide Urban Area, Nagasaki Prefecture

## **2. Wide-Area Cooperation from the Perspective of Energy Projects**

### **2.1 Urban Areas by Collaboration Agreement with Central City**

In Japan, the term “wide-area administration (*kouiki-gyosei*)” has been used in the past, but recently the term “wide-area cooperation (*kouiki-renkei*)” has been widely used. The former focuses on the administrative activities themselves, while the latter focuses on the cooperative relationships among local governments (Japan Municipal Research Center 2011, p. 3).

The legal system of wide-area cooperation had already been introduced in the municipal system enacted in 1888, the starting point of the modern local government system in Japan. In other words, the union system was recognized as a method of wide-area cooperation among towns and villages. However, this union system was recognized only for towns and villages, and was allowed as a convenient alternative to municipal mergers for towns and villages that could not be merged in the Meiji era (1868-1912) (Yokomichi, 2007; Yokomichi, 2016). In Japan, the Meiji government promulgated the “City and Town System” in 1888, and the former Ministry of Interior instructed the government to promote the merger of towns and villages. As a result of the top-down promotion of municipal mergers, the number of towns and villages decreased from 71,314 at the end of 1888 to 15,820 at the end of 1889, a decrease of about one-fifth. At that time, the standard size of towns and villages was approximately 300 to 500 houses, which was roughly the area of one elementary school. After the big merger of the Meiji era (1868-1912), towns and villages, which had been land-linked communities, were transformed into local public organizations to govern the region in a modern sense. However, in areas that have not undergone mergers, there is still a tendency for the townships to retain their geographical ties from the Edo era up to the

present day, and this duality is a characteristic of Japanese towns and villages when compared to those in western countries (Yokomichi, 2007).

After the World War II, reforms of the local government system led to a significant transfer of administrative affairs to municipalities, which in turn led to the consideration of systems and municipal measure policies to strengthen the administrative and fiscal capacity. One of these measures was the promotion of municipal merges to optimize the size of municipalities, while another was the promotion of joint processing of local government affairs (Kimura, 2019, p. 7). The development of wide-area cooperation among municipalities was advocated by the Ministry of Interior (now the Ministry of Internal Affairs and Communications: MIC), which formulated the concept of wide-area municipal blocs in response to the new National Comprehensive Development Plan in 1969. The idea was to establish wide-area municipal blocs in order to comprehensively promote and develop the region through the organic combination of cities and surrounding agricultural, mountainous, and fishing villages (Kimura, 2019, p. 8).

In May 2008, the MIC's "Study Group on Self-Support Settlement Region" proposed a concept of the "Self-Support Settlement Region (*Teiju Toshiken Kousou*)", in which the central city and surrounding municipalities within the region would work together under a shared role<sup>1</sup>. In June 2013, the 30th Report of the Local Government System Study Group indicated the need for wide-area cooperation with regional hub cities at the core. The following year, in May 2014, the Local Autonomy Law was amended to establish a "cooperation agreement (*Renkei-Kyotei*)" to promote new wide-area cooperation. In addition, in December 2014, "the Comprehensive Strategy for Overcoming Population Decline and Vitalizing Local Economy" in Japan unified the new wide-area cooperation into "the Urban Area by Cooperative Agreement with Central City" (UACACC).

As the population declines and aging population, the financial situation of the government becomes more difficult, so the purpose of the UACACC is to make efficient use of limited financial resources through cooperation between the central city of the region and neighboring municipalities (Nakayama, 2021, pp. 173-174). According to the "Guidelines for the Promotion of UACACC" (the Guidelines), the purpose of UACACC is to "create a base to maintain a certain population and a vibrant social economy even in a society with declining population, low birthrate, and aging population", "by having the central city of the region, which has a considerable size and core to drive economic growth", "accumulate and strengthen higher-order urban functions", and "improve life-related services" through compactness and networking (MIC 2015, p. 3; Tsuji, 2015, p. 52; Suzuki, 2016, p. 41).

The requirements for the UACACC are set as (1) government-designated cities and new core cities (population of 200,000 or more) in regional areas (excluding the three major metropolitan areas: Tokyo, Osaka, and Nagoya) and (2) cities with a day/night population ratio of roughly 1 or more (MIC, 2015; Tsuji, 2015, p. 52; Suzuki, 2016, p. 41). To promote UACACC, cities that meet certain conditions (designated cities and core cities outside the three major metropolitan areas with a daytime/nighttime population ratio of more than 100) will declare themselves as "UACACC" (Nakayama, 2021, p.174). The UACACC is expected to play the following roles: (1) driving economic growth in the entire region (supporting joint research and new product development by industry-academia-government collaboration, etc.), (2) accumulating and strengthening higher-order urban functions (improving the system for advanced medical care, creating an environment for higher education and

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<sup>1</sup> MIC's Study Group on Self Support Settlement Region, May 2008, available online at: [http://www.soumu.go.jp/main\\_sosiki/kenkyu/teizyu/pdf/0805162.pdf](http://www.soumu.go.jp/main_sosiki/kenkyu/teizyu/pdf/0805162.pdf).

R&D, etc.), and (3) improving services for life-related functions in the entire region (improving the rotation of hospitals to ensure regional medical care, forming a regional public transportation network, etc.) (Suzuki, 2016, pp. 41-42).

Regarding the UACACC, Morotomi (2017) points out that while it is “a strategy to maintain the living standard of residents while making the city more compact”, “an important theme in urban management will be how local governments can earn money to compensate for increasing expenses in the absence of growth in tax revenue. In this sense, he also points out that firstly, the UACACC “was very new in that it did not merely create new receptacles for administrative functions, but also clearly attempted to provide functions for planning and implementing the growth of the regional economy. The second is, at the same time, that it can be positioned as the creation of a framework for sharing the fruits of regional economic development”.

## 2.2 Local Governments and Energy Projects: A *Stadtwerke*’s Perspective

In recent years, in the field of energy business, there has been a movement in many parts of Japan to establish energy businesses and create a system to promote circular economy in the region, based on the model of *Stadtwerke*, a public utility corporation that manages comprehensive infrastructure in Germany. *Stadtwerke* is a German word that refers to a public utility company in which the local government has a stake. They provide a wide range of services closely related to citizens’ lives, such as water supply, sewage, public transportation, waste disposal, and maintenance of public facilities, with a focus on energy business consisting of electricity, gas, and heat supply (Morotomi, 2017).

*Stadtwerke* is an independent, profitable public utility that builds and maintains the infrastructure to enable it to provide these services. *Stadtwerke* is involved in the distribution of electricity, retailing of electricity, and generation of electricity using the distribution network owned by the municipality. One of the characteristics of *Stadtwerke* is that it uses the profits from these energy businesses to reinvest in leisure-time public utilities. In Europe, deregulation of the electricity industry began in the 1990s, which led to intensified competition in the electricity business. Initially, it was said that the *Stadtwerke* would not be able to compete with private companies and would disappear. However, they overcame the competition and survived, and are now growing into an indispensable player in the German power system (Greiling, 2013; Morotomi, 2018, p. 168).

On the other hand, the reason why the *Stadtwerke* is rapidly gaining popularity in Japan since “regional revitalization” and “regional development” have become major policy issues. In the midst of declining population, a major issue is how to reverse the decline, put the local economy on a sustainable development track, and increase employment, and where to get the financial resources to do so. The reason why the *Stadtwerke* is attracting more attention is because it is seen as one of the most potential methods (Morotomi, 2018, pp. 172-173).

Here shows the expansion trend of New Power (*Shin-Denryoku*). Figure 1 shows the trend in the share of New Power (*Shin-Denryoku*) companies.

Share is calculated based on the amount of electricity sold: as of March 2021, the share of new electric power companies in total electricity sales will be approximately 19.5%. Of this, the share of the low-voltage sector, including households, will be approximately 20.2% (the above figures for new electric power do not include electricity supplied by major power companies such as Kyushu Electric Power outside of their supply areas, but include subsidiaries of major power companies). Generally in Japan, electricity supplied by power companies is divided into “Low Voltage”, “High Voltage”, and “Extra-High Voltage” according to voltage. Low Voltage is suitable for residences, small stores, offices, etc., as the contracted power is less than 50kW. High Voltage is

defined as 750 volts or more but less than 7,000 volts for direct current, or 600 volts or more but less than 7,000 volts for alternating current. Since the contract power is more than 50kW, it is suitable for various facilities such as restaurants, beauty salons, offices, kindergartens, nursery schools, supermarkets, and factories. Finally, Extra-High voltage is exceeding 7,000V, and it is used for facilities that use large amounts of power. With a standard voltage of 20,000V or higher, the use of Extra-High Voltage power is limited to large factories and other large facilities. The details are specified in “The Ministerial Ordinance That Establishes Technical Standards Concerning Electrical Equipment”<sup>2</sup>.

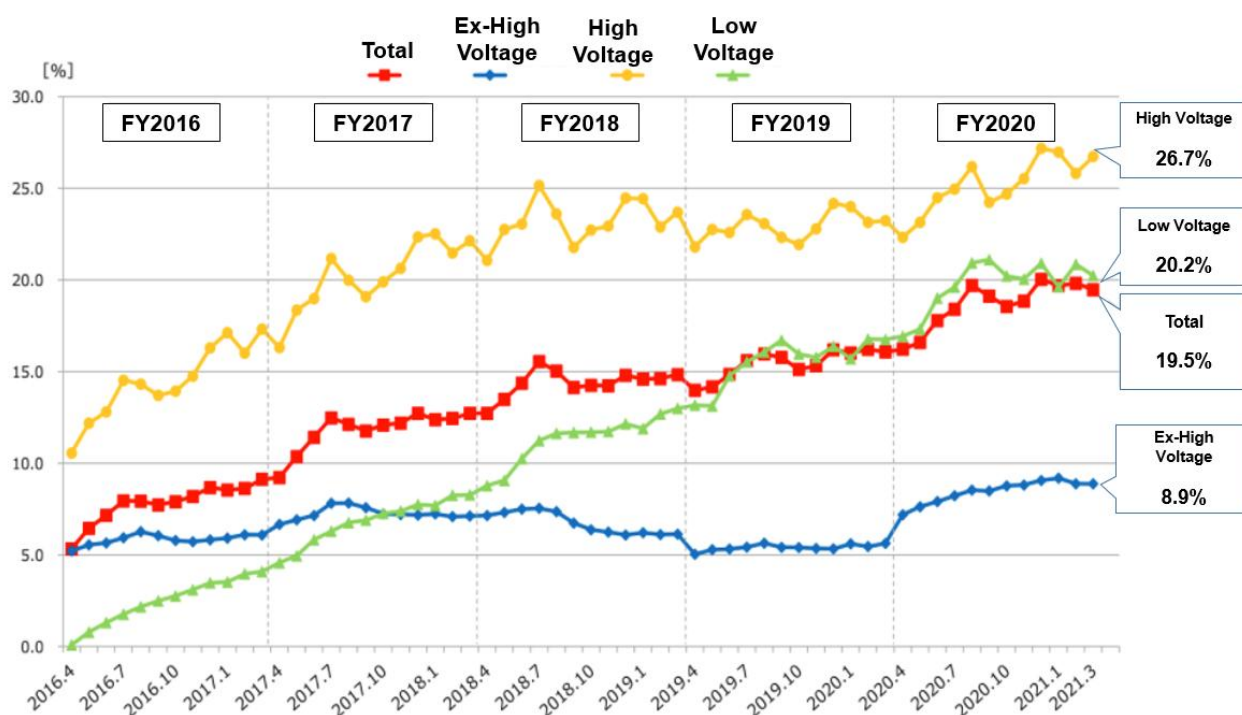


Figure 1 The Trend in the Share of New Power<sup>3</sup>

Source: Agency for Natural Resources and Energy (Ministry of Economy, Trade and Industry in Japan, 2021).

In Japan, “community energy business entities (*Jichitai Shin Denryoku*)” (CEBEs) as a *Stadtwerke*-like entity are rapidly being established. Among them, Miyama City in Fukuoka Prefecture has embarked on a new regional power business in the municipality by establishing Miyama Smart Energy Corporation (MSE), a regional power company that links ICT with power sales, citizen services, local production for local consumption, and industrial promotion, with the involvement of the city government. The constituent entities of MSE, Miyama City, Chikuho Bank, and Kyushu Smart Community, have capital ties and investments with MSE. With the city government taking a 55% stake in the company, it is actively involved in smart community projects as a CEBE. Also, under Japan's Companies Act, the project can be adopted by a majority vote at the shareholders' meeting, which is also an incentive for the city government to undertake the project (Haga, 2017).

Then, based on *Stadtwerke*'s argument, who takes the initiative in the formation process of energy business management by CEBEs among the stakeholders who play a role in municipal and regional energy projects? The

<sup>2</sup> See Japan Electrical Engineer's Association, “Voltage Classification and Facility Regulations in the Technical Standard for Electrical Equipment” (April 2021), available online at: <https://jea.or.jp/latest-info/release/pdf/080408.pdf>.

<sup>3</sup> Available online at: [https://www.meti.go.jp/shingikai/enecho/denryoku\\_gas/denryoku\\_gas/pdf/0370300.pdf](https://www.meti.go.jp/shingikai/enecho/denryoku_gas/denryoku_gas/pdf/0370300.pdf).

research questions of this paper are: who takes leadership and initiative when involved in energy projects? what processes are used to engage stakeholders in energy project organizations? And what are the relationships among the stakeholders involved in energy projects?

In the aforementioned case of Miyama City, in addition to the objective of “local production and local consumption of energy within the city”, “efforts to provide non-energy resident services as value-added services, such as watching over the elderly and supporting the families with small children”, are unique in the smart community project (Haga, 2017), it is highly recognized and appreciated both politically and socially by CEBEs to help municipalities generate revenue and contribute to the local value-added structure, as well as to improve the quality of life by providing affordable energy to citizens (Murakami et al., 2014). With this, what is the significance and purpose of engaging in energy projects in CEBEs? The priorities of the issues in the region and local governments are also different, and this can change the project scheme and the project management system.

#### 2.2.1 Governance Structure, Company Organization, and Expansion of Business Scope in Stadtwerke

In a detailed examination of the strategic and managerial challenges in Stadtwerke’s energy business, based on existing research, Laubach (2017) found that one of the strategic actions that explains Stadtwerke’s competitiveness is “organizational development with a focus on governance and operational specialization”. In accordance with German companies law, the general form of Stadtwerke, which takes the legal form of a limited liability company (GmbH) or a joint stock company (AG), is the establishment of two periods: the executive board, which has the authority of basic management autonomy, and the audit committee, which sets the general strategic direction and monitors and supervises the executive board (Laubach, 2017). From this public sector side, the mayor and city council members participate in the audit committee, and have room to intervene in management by means of approving the articles of incorporation and med-term/long-term plans, and appointing and dismissing executive committee members. As a result, economic goals become more important than in municipal direct management, and the executive committee members are given greater management autonomy to implement them. In this regard, Kotani (2021) states that as a result, while a certain amount of consideration is required for the public interest, the company is able to make management decisions based on profitability, which is thought to lead to competitiveness.

On the other hand, in Stadtwerke, according to Nakayama (2017), with regard to the municipal population size of the new urban and village public utility companies established after 2005, municipalities or federations of municipalities with a population size between 10,000 and 25,000 have established the largest number of urban and village public cooperation. In most cases, the population covered by a single corporation is in the range of 10,000 to 50,000, accounting for 45 of the 72 cases. On the other hand, few new city corporations have been established in municipalities with populations of 50,000 or more. The reason is that cities of this size already own their own city corporations (Nakayama, 2017, pp. 43-44).

### 2.3 Wide-Area Cooperation in Energy Business

On the other hand, with regard to wide-area cooperation in energy projects, Kageyama (2016) focused on the case of Miyama City and Bungo-Ono City in Oita Prefecture concluding a “Cooperation Agreement for the Utilization of Local Renewable Energy” on October 4, 2016, and the case of Miyama City already concluding agreements with Kimotsuki Town in Kagoshima Prefecture and Ichiki-Kushikino City in March of the same year regarding mutual exchange of renewable energy, etc. are discussed<sup>4</sup>. In addition, Narimatsu et al. (2018), a study

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<sup>4</sup> See also Aoki (2017) for a case study of Bungo-Ono City.

by a group from Nagasaki University, uses the collaboration between Miyama City in Fukuoka Prefecture and Bungo-Ono City in Oita Prefecture as a case study to clarify the actual situation of inter-municipal collaboration for the utilization and expansion of renewable energy in rural areas as described above, and they look ahead to the possibilities of how much inter-municipal collaboration can contribute to regional revitalization and the expansion of renewable energy. As a result, it became clear that firstly, the aim is to realize regional development through mutual local consumption of energy by further utilizing and promoting the spread of renewable energy in both cities, and secondly, they are also considering the possibility of mutually exchanging electricity in the future in case of surplus or disaster. Narimatsu et al. (2018, pp. 61-62) note that one thing that should be noted is that even though the cooperation agreement between municipalities is aimed at expanding the use of renewable energy, there is a secondary exchange at the citizen level, as evidenced for example by the case of mutual display of local products at events within the region. On the other hand, as a disadvantage of inter-municipal cooperation, Narimatsu et al. pointed out that both cities are generating different types of renewable energy, and when it comes to actual power sharing, both sides have to coordinate. For example, based on their interview survey, they found disadvantages mainly related to infrastructure development, such as the cost of increasing the capacity of interconnection lines and the risk of blackouts due to excess operational capacity.

In addition, Fukuda and Hanada (2020) used the Nishi-Tsugaru region (Tsugaru City, Ajigasawa Town, and Fukaura Town) as a model region, assuming a case in which a local government establishes a CEBE to conduct retail electric power business either alone or through joint investment, and aimed to clarify the conditions, issues, and effects of the establishment (Fukuda & Hanada, 2020, p. 129). Earlier empirical studies had shown that a certain scale is required for the management of a CEBE to be viable, and that the minimum size is a municipality with a total population of 30,000, but Fukuda and Hanada (2020) reaffirmed this conclusion after a more comprehensive study on a wider region. They conclude that the challenge is to overcome political and social obstacles, as well as practical and procedural difficulties, for the establishment of CEBEs through wide-area cooperation, even in municipalities with a total population of 10,000 to 20,000.

As mentioned in 2.2.2, this result confirms the large number of city and village public corporations established in Stadtwerke with a municipal population of 10,000 to 25,000 people. This raises the issue of the size of the population that can be served in energy business management and the scope of electricity to be supplied. The issue of administrative scope in energy business management, that is, the significance of wide-area cooperation in energy business, will be a point of discussion.

#### **2.4 Relationship Between CEBEs and SDGs (Sustainable Development Goals)**

In recent years, the Sustainable Development Goals (SDGs) have been attracting more attention at the national, municipal, corporate, and citizen levels. The SDGs are the international goals for a sustainable and better world by 2030, as stated in the 2030 Agenda for Sustainable Development, which was unanimously adopted by the member countries at the UN Summit in September 2015. It consists of 17 goals and 169 targets, and pledges to “Leave no one behind”<sup>5</sup>.

In Japan as well, in order to promote efforts by local governments to achieve the SDGs that will contribute to the promotion of regional development, the SDGs Promotion Headquarters of the Cabinet Office invites applications for initiatives by local governments to achieve the SDGs, with the aim of creating and disseminating advanced examples that can serve as models for other local governments, and selects local governments that

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<sup>5</sup> For details, see: <https://www.mofa.go.jp/mofaj/gaiko/oda/sdgs/about/index.html>, accessed 2021/10/02.

propose best practices as “SDGs Future Cities”. In addition, it selects the most outstanding and leading initiatives among them as “Municipal SDGs Model Projects” and supports them with government subsidies<sup>6</sup>.

Furthermore, in relation to CEBEs, there are municipalities that have included the SDGs in their comprehensive or master plans<sup>7</sup>, and CEBEs that have explicitly included the 17 goals of the SDGs as icons on their websites<sup>8</sup>.

According to Kojima (2019), CEBEs are those that utilize local resources as power sources, produce new energy, and use it within the region. He points out that this system as a new form of local production for local consumption of energy, not only solves environmental issues such as the realization of a low-carbon society, but also leads to “sustainable regional development” by promoting local employment, resource utilization, and industrial development. In other words, CEBEs have a great potential to become a driving force for local governments to achieve the SDGs (Kojima Y., 2021; Jigyo-Kousou, March, 2019)<sup>9</sup>. In the case of *Stadtwerke* in Germany, it has been implementing infrastructure projects such as energy in the form of a public corporation even before the SDGs were formulated.

In light of these recent situations, are CEBEs in Japan conducting their energy business operations with an awareness of the SDGs as a goal? Or can they contribute to the realization of the SDGs through wide-area cooperation?

## **2.5 Issues Related to Energy Business Operation and Governance of CEBEs through Wide-Area Cooperation**

When the discussion of wide-area cooperation and energy projects mentioned in Section 2 is considered in the context of energy project management by CEBEs in Japan, several points can be raised. First, what is the significance and purpose of engaging in energy projects in CEBEs, and in particular, what is the significance of engaging in such projects as a wide-area cooperation?

Second, who is taking the leadership and initiative when they enter the energy business, and what is the process by which stakeholders participate in the energy business organization, and what are the relationships among stakeholders? Third, are the CEBEs conducting their energy business operations with an awareness of the SDGs?

In order to clarify the above issues, this paper discusses the current status and issues using the case study of the wide-area cooperative CEBEs being developed in the Nishi-Kyushu Sasebo Wide Urban Area, which was started mainly by Sasebo City and surrounding municipalities in Nagasaki Prefecture.

## **3. Current Status of CEBEs through Wide-Area Collaboration - A Case Study of Nishi-Kyushu Sasebo Powers (NSP)**

### **3.1 Background of the Nishi-Kyushu Sasebo Wide Urban Area**

“The Nishikyushu-Sasebo Wide Urban Area” (NSWUA) is the name of a coordinated urban area of five cities and six towns in Nagasaki Prefecture: Sasebo City, Hirado City, Matsuura City, Saikai City, Higashikanogi

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<sup>6</sup> For details, see: Endo (2019), Chapter 2.

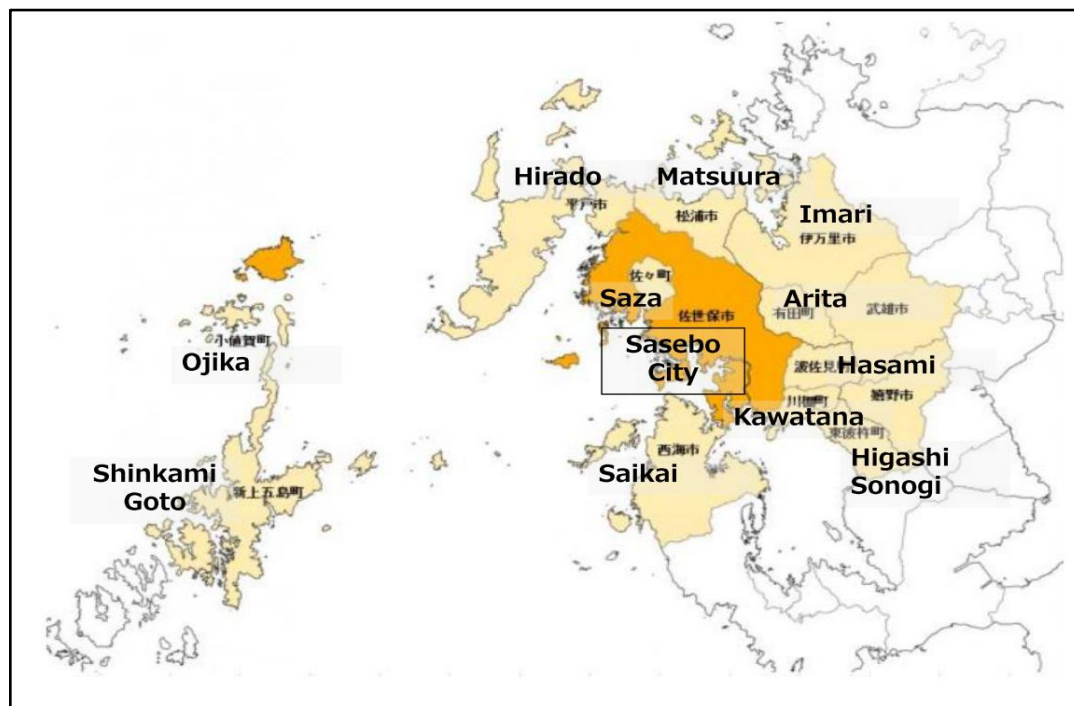
<sup>7</sup> For example, see Kitakyushu City Basic Concept and Basic Plan, accessed 2021/10/02, available online at: [https://www.city.kitakyushu.lg.jp/shisei/menu05\\_0068.html](https://www.city.kitakyushu.lg.jp/shisei/menu05_0068.html).

<sup>8</sup> For example, the Oiden Energy Corporation, a new regional power company in Toyota City, Aichi Prefecture, accessed 2021/10/02, available online at: <https://www.oidenenergy.com/sdgs>.

<sup>9</sup> Available online at: <https://www.projectdesign.jp/201903/sdgs-local-creation/006077.php>, accessed 2021/09/20.



Town, Kawatana Town, Hasami Town, Ojika Town, Shin Kami Goto Town, in Saga Prefecture: Imari City, and Arita Town) with Sasebo City as the central city. The purpose of this wide-area cooperation is to share a sense of crisis over regional issues that are expected to accelerate in the future, such as the rapid decline in population, and to form a regional area for the integrated and sustainable development of the regional economy and society for the future<sup>10</sup>. The following map shows the area of the NSWUA located on the western edge of mainland Japan (Figure 2).



**Figure 2 Map of Nishi-Kyushu Sasebo Wide Urban Area (NSWUA)**

Source: Sasebo City Home Page<sup>11</sup>

The population of the region was about 488,000 at the 2015 census, but it is continuing to decline and is expected to fall below 370,000 by 2040 (National Institute of Population and Social Security Research estimate). NSWUA has set a population target of 413,000 or more for 2040. It aims to strengthen the “population dam function” to stop residents from moving out of the region through the effects of the inter-municipal cooperation project. The NSWUA has 45 projects in the planning stage, among which there are 10 priority projects. For example, in addition to the expansion of sales channels for local products and the promotion of wide-area excursion tourism, the promotion of renewable energy and the establishment of CEBEs are also priority projects. The project is expected to reduce costs through wide-area cooperation rather than single municipalities working on their own.

As mentioned in section 2.1, the purpose of such wide-area cooperation is for the central city of a region with a considerable size and core to cooperate with neighboring municipalities to form a base for maintaining a certain population in the region and a vibrant socio-economy even in a society with a declining population, low birthrate, and aging population through compactness and networking. In addition, the “Declaration of Coordinated Central

<sup>10</sup> For details, see <https://nishi-kyushu.de-power.co.jp/company/>, accessed 2021/09/20.

<sup>11</sup> Available online at: <https://www.city.sasebo.lg.jp/kikaku/seisak/kouikirenkei.html>, accessed 2021/10/03.

City” is a declaration by the city (Sasebo City), which has considerable scale and core characteristics within the area, to become the central city of the area, to drive economic vitalization, and to play a role in supporting the lives of all residents in the area.

On September 3, 2018, Sasebo City declared itself as a “Coordinated Central City”. Subsequently, on January 12, 2019, a ceremony was held to conclude cooperation agreements with Hirado City, Matsuura City, Saikai City, Imari City, Higashikanogi Town, Kawatana Town, Hasami Town, Ojika Town, Shin Kamigoto Town, and Arita Town.

On March 26, 2019, five cities and six towns formulated the “Nishi-Kyushu Sasebo Wide Urban Area Vision”, which sets the goal of a population of 400,000 or more in the area in 2040 and describes specific measures to achieve it, with the future vision of “Nishi-Kyushu, a town you can change”. Later, in order to add neighboring Saza to the NSWUA, which was formed on April 1, 2019, a cooperation agreement was signed with Saza Town, and in March 2020, Saza Town newly joined the NSWUA member, and the NSWUA's Vision was revised. As a result, the population of the region in 2040 is targeted to be more than 413,000, and measures to realize the vision goal have been started (Sasebo City, 2020).

### **3.2 Outline and Current Status of Nishi Kyushu Sasebo Powers (NSP)**

#### **3.2.1 Positioning of the Energy Business in the NSWUA's Vision**

In the aforementioned NSWUA's Vision, the three roles required of the area are clearly stated. (1) to drive economic growth for the entire region, (2) to accumulate and strengthen higher-order urban functions, and (3) to improve services for life-related functions for the entire region.

In this context, “economic circulation within the region through CEBEs (or Municipal PPS)” is positioned as one of the prioritized projects. The specific measures include “strengthening of living functions”, “strengthening of ties and networks”, and “strengthening of regional management capacity”. Of these, “strengthening of living functions” falls under the category of “regional development” (Sasebo City, 2020).

By establishing CEBEs, the revenue from the supply of electricity to public facilities and private businesses in the region will be retained within the region, and the revenue will be used to develop projects that contribute to solving the problems of the local governments and lead to the revitalization of the region. The effects of the wide-area cooperation will include regional economic circulation and regional development through the creation of projects that give back to the region. NSP purchases electricity from power plants and the Japan Electric Power Exchange (JEPX) and supplies it to consumers using Kyushu Electric Power's transmission and distribution network. In the case of NSP, it is currently working with Kyushu Electric Power Inc.<sup>12</sup>.

#### **3.2.2 Overview of Nishi Kyushu Sasebo Powers Co.**

“Nishi Kyushu Sasebo Powers Co., Ltd.” (NSP) was established on August 1, 2019 as a CEBE through joint investment with Sasebo City, Pacific Power Corporation, and The Shinwa Bank, Ltd. (Now the Juhachi-Shinwa Bank). The purpose of NSP is to “return profits to the Nishi-Kyushu Sasebo Wide Urban Area to the maximum extent possible as a non-dividend-paying joint-stock company, while making the electricity retail business, which supplies electricity beyond the boundaries of administrative districts, the foundation of management<sup>13</sup>. The

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<sup>12</sup> Based on interviews with the Policy Planning and Management Division, Sasebo City, and Pacific Power Corporation (April 21, 2021), and materials provided by Sasebo City. Kyushu Electric Power Co Inc. is a Japan-based company mainly involved in the electric power business. It has four business segments. The Domestic Electric Power segment mainly consists of domestic power generation and retail business, as well as power transmission and distribution business in the Kyushu region.

<sup>13</sup> Sasebo City (2019) “Establishment of Nishi Kyushu Sasebo Powers Co., Ltd.” (August 2, 2021) Sasebo City Press Release (URL)

overview of NSP's is shown in Table 1. As for the staff, NSP outsources them to Pacific Power, so there is no employment<sup>14</sup>.

**Table 1 Business Overview of NSP**

Contents	Main Business
1. Energy Supply	Retail electricity/Power sales agency/Electricity wholesale/Specified transmission and distribution/Power generation/Heat supply
2. Community Development	<ul style="list-style-type: none"> <li>• Provision of consulting and services related to Public-Private Partnerships</li> <li>• Community development projects</li> </ul>
3. Services Related to Energy Use	<ul style="list-style-type: none"> <li>• General services related to energy business</li> <li>• Energy equipment, facilities, and energy systems</li> <li>• Energy conservation</li> <li>• Trading of energy resources, and environmental values in general</li> <li>• Consulting services related to energy cost reduction</li> </ul>

Source: NSP's Website<sup>15</sup>

### 3.3 Role of Stakeholders Participating in the NSP

#### 3.3.1 Relationship between Sasebo City and Other Cities

As for the division of roles among the municipalities participating in the NSP, Sasebo City, as the central city, will be responsible for investment and governance of the NSP, as well as the creation of a mechanism for regional returns<sup>16</sup>. On the other hand, other NSWUA's member cities and towns will be responsible for electricity contracts for public facilities, participation in the community return project using the proceeds, and recommending electricity retail agencies.

Sasebo City has two roles to play as the investor (largest shareholder), and the central city of the NSP. First, as the largest shareholder, Sasebo will monitor the business operation for the investors (shareholders) and report and explain the situation to the city council and citizens. In addition, for consumers, the city will confirm the appropriateness of the electricity sales price and the appropriateness of the regional contribution project. Secondly, as the central city, Sasebo City will report on the management situation, the appropriateness of the electricity sales price, and of the regional contribution project<sup>17</sup>.

#### 3.3.2 Relationship between NSP and Cooperating Local Governments

The NSP has been established as one of the partnership projects of the NSWUA. The purpose of the agreement is to collaborate in efforts to drive economic growth in the NSWUA and for life-related services by reducing the outflow of electricity and other "wealth" out of the region by establishing a mutually cooperative relationship and using the equivalent profits gained to return to the utilities in each region. The NSP was started as a wide-area cooperative project of the NSWUA, and the cities and towns that make up the cooperative project "Intra-regional Economic Circulation through CEBEs (Municipal PPS)" are Sasebo City, Hirado City, Matsuura City, Saikai City, Higashisonogi Town, Shin-Kamigoto Town, and Imari City. However, the only municipalities

[https://nishi-kyushu.de-power.co.jp/docs/20190802\\_press\\_release.pdf](https://nishi-kyushu.de-power.co.jp/docs/20190802_press_release.pdf).

<sup>14</sup> Interview from the Planning and Management Division, Planning Department, Sasebo City and Pacific Power (April 21, 2021).

<sup>15</sup> Available online at: <https://nishi-kyushu.de-power.co.jp/company>, accessed 2021/10/03.

<sup>16</sup> The role of local governments can be selected. See Sasebo City Planning Department, Policy Management Division (2020), "Nishi-Kyushu Sasebo Wide Urban Area Vision" (Specific Approaches), published March 2019, revised March 2020, Sasebo City, p. 28.

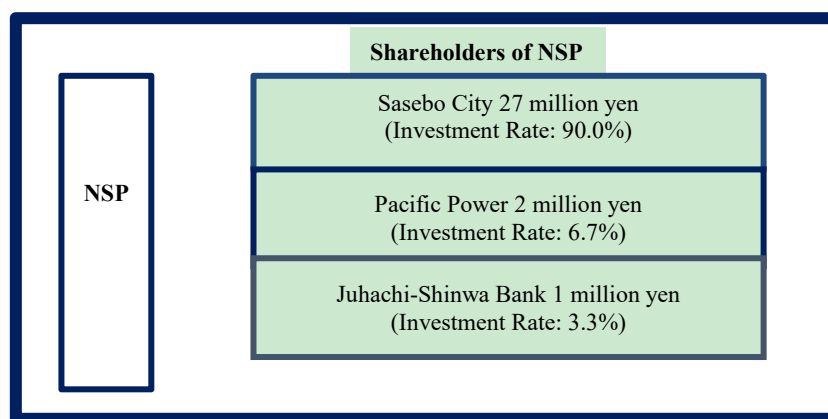
<sup>17</sup> Interview from the Planning and Management Division, Planning Department, Sasebo City and Pacific Power (April 21, 2021).

that have actually signed contracts are the towns of Shin-Kamigoto and Higashisonogi<sup>18</sup>.

Of these, Higashisonogi Town held a signing ceremony for an agreement on cooperation with NSP on October 27, 2020. Basically, the agreement stipulates that the electricity needed by the public facilities in Higashisonogi Town will be procured from NSP, and that the equivalent profit earned by NSP will be used for the cooperative projects. Prior to this agreement, Higashisonogi Town's tourism information dissemination, event planning, green tourism secretariat, and businesses to promote immigration and settlement (Higashisonogi Town Furusato Koryu Center) have signed on as agents to handle sales to acquire NSP customers, mainly in the town. In addition, in contracts made through agents, a portion of the electricity bill is passed on to the center in question, making it possible for customers to support local organizations with their electricity bills. The town of Shin-Kamigoto has also signed a similar agreement with the Shin-Kamigoto Town Tourism and Products Association for an agency contract<sup>19</sup>.

### 3.3.3 Roles of Stakeholders in NSP's Business Operation and Investment Ratio

The capital of NSP is 30 million yen, but as shown in Figure 1, Sasebo City, Pacific Power, and The Juhachi-Shinwa Bank have 90.0%, 6.7%, and 3.3%, respectively, of the investment amount and investment ratio of the three stakeholders participating in the energy business.



**Figure 3 Stakeholders of NSP and Investment Ratio**

Source: NSP's Website<sup>20</sup>

### 3.3.4 Energy Governance Scheme and Monitoring System Through NSP

The NSP is divided into two parts: electricity retail business such as electricity operation, contract procedure, billing procedure and sales, and community contribution business for value-added projects. The following sections describe the relationship between Sasebo City, consumers, partner cities and towns and NSP, and the relationship between each stakeholder.

<sup>18</sup> Interview from the Planning and Management Division, Planning Department, Sasebo City and Pacific Power (April 21, 2021).

<sup>19</sup> For details, see [https://nishi-kyushu.de-power.co.jp/docs/20201104\\_press\\_release.pdf](https://nishi-kyushu.de-power.co.jp/docs/20201104_press_release.pdf), accessed 2021/10/03.

<sup>20</sup> Available online at: <https://nishi-kyushu.de-power.co.jp/company>, accessed 2021/10/03.

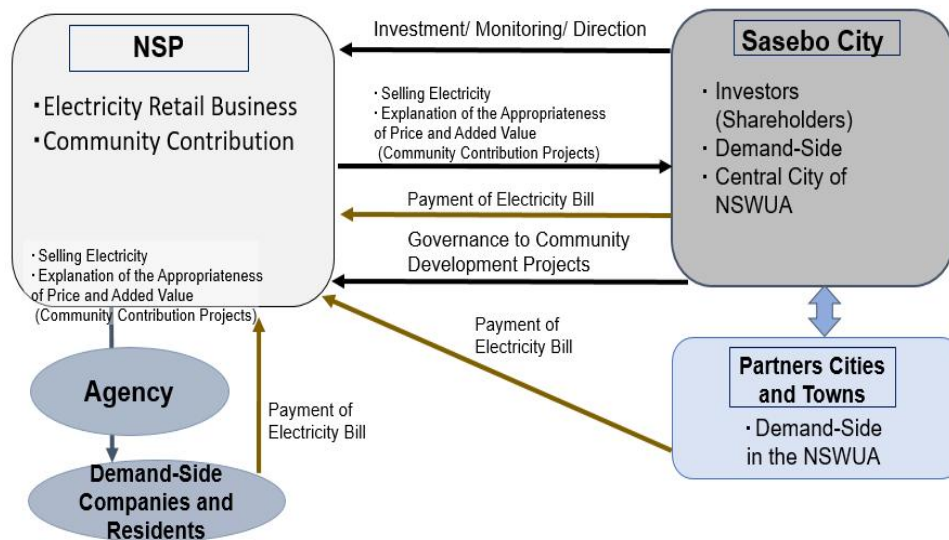


Figure 4 NSP's Governance and Monitoring Scheme

#### (1) Sasebo City

As the largest shareholder, Sasebo City will monitor the business status to the investors (shareholders) and report and explain to the city council and citizens. In addition, the city will provide NSP with investment/monitoring and guidance, payment of electricity bills, and governance for community contribution projects. Conversely, NSP will explain to the city the appropriateness of electricity sales/prices and the appropriateness of added value (community contribution projects).

#### (2) Collaborating Cities and Towns

For partner cities and towns such as Higashisonogi Town and Shin-Kamigoto Town, NSP will confirm the appropriateness of the electricity sales price to consumers, confirm the appropriateness of the community contribution project, and report to the council. In addition, NSP will explain the appropriateness of electricity sales/prices and the appropriateness of added value (community contribution projects) to the partner cities and towns. In addition, NSP will explain the appropriateness of electricity sales/prices and the appropriateness of added value (community contribution projects) to the partner cities and towns. In relation to Sasebo City, NSP will cooperate with the partner cities and towns in governance of community contribution projects.

#### (3) Customers (Companies and Residents in the Region)

NSP will explain the appropriateness of electricity sales/prices and the appropriateness of value-added (community contribution projects) to the consumers (companies and residents in the region) through agents (sales representatives, etc.). The consumers will pay the NSP for the electricity. In this way, multiple constituent entities are involved in NSP's business, and Figure 2 shows the governance and monitoring system based on the positioning and roles of each entity and the relationships among multiple stakeholders as described above.

Secondly, the decision making on the NSP's governance will be done by the Deputy Mayor of Sasebo City, who is equivalent to the President, but about once every two months, a meeting called the Management Council is held where all the executives gather, and decisions will be made there. In addition, agendas raised by Sasebo City will be measured by the Management Council, which will make requests after hearing the opinions of the partner cities and towns.

With regard to stakeholder engagement, in a broad sense, because NSP is a *dai-san sector* (literally, “the third

sector”)<sup>21</sup> in the NSWUA, it is in a position to perform a certain level of accountability as long as Sasebo City's tax money is invested in it.

Typically, local governments in Japan meet in March, June, September, and December; NSP will be accountable to the city council by providing regular management status reports to the council at the timing of June every year, and at the same time, and it will be accountable to the citizens as taxpayers. As for stakeholder participation in the future, according to the interview, “if more corporate partners who share the founding philosophy and participate in the project increase, Sasebo City will not have to remain as a shareholder with more than 90% of the shares, and may even reduce its stake”<sup>22</sup>.

## 4. Discussion

Based on the results of the interview survey conducted for NSP in April 2021, several issues will be discussed.

### 4.1 Characteristics of NSP's Business

The purpose of establishing NSP is to keep the money that goes out of the region as electricity bills within the region, and to promote regional development, renewable energy, and locally produced energy for local consumption by using the equivalent profits from the electricity retail business.

What is particularly unique about NSP's project is, first, the introduction of energy-creating, energy-saving, and energy-storing equipment into public facilities to return profits to the community. A project to install solar power and storage batteries in public facilities, especially those positioned as disaster prevention centers in the region, is underway from 2021 onward, and is expected to strengthen resilience and eventually contribute to the community for the citizens.

The second is the implementation of price reduction and “agency supply” through bulk bidding for power supply contracts. This was due to the fact that the Sasebo City first fell into the situation where there were not many facilities that could supply the power while reducing the power rates if they just proceeded to purchase it from the power market. As a new public-private partnership scheme, Sasebo City has been bidding for the power supply contract individually by each department, but NSP will bid for the contract collectively with the power companies. This is a specific mechanism that we have set up as an intermediary supply from Kyushu Electric Power. Through these efforts, we have been able to reduce the electricity bill by about 11% even after taking out the margin of NSP, according to the calculation as of year 2020.

### 4.2 Significance of Implementing an Energy Business through Wide-Area Cooperation

The objectives of establishing the NSP are: 1) to retain within the region the “wealth” that has been flowing out of the region in the form of electricity bills; 2) to use the equivalent of profits from the electricity retail business to carry out public interest projects such as regional development; and 3) to contribute to the national energy policy by promoting renewable energy and locally produced energy for local consumption. In NSP, there was the circumstance that Sasebo City did not have its own energy policy, but it was based on the idea that if the city could accumulate money while hedging risks through intermediary supply, and promote the introduction of

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<sup>21</sup> The term, “*dai san sector*” refers not in a Western sense to a third sector beyond the domains of the business world and the government, nor to a nonprofit or voluntary sector as it is understood in the West. Instead, the term “*dai san sector*” means hybrid institutions that are essentially half public and half business.

<sup>22</sup> Interview from the Planning and Management Division, Planning Department, Sasebo City and Pacific Power (April 21, 2021).

renewable energy and energy conservation, items 1) through 3) would be connected.

As for the economic effect after the establishment of the NSP, the money that Sasebo City has been paying has been reduced from about 970 million yen to 860 million yen, which is a reduction of 110 million yen. On the other hand, as for the employment effect, NSP is aiming to introduce renewable energy while keeping fixed costs as low as possible, as the electricity forecasting system has been automated to a great extent due to the spread of AI and other factors. Therefore, at this point, NSP is promoting the installation of equipment without directly employing personnel.

Currently, the NSWUA has an area population of about 470,000, and the NSP has prioritized building services that can reach the residents of the region. For example, there are twenty seven District Self-Governing Councils (*chiku jichi kyogikai*)<sup>23</sup> in Sasebo City, and NSP are considering the installation of security lights in each district and installing solar power plus storage batteries. In terms of expanding the supply of electricity to households, NSP is also considering signing a sales agency agreement with the District Self-Governing Councils to increase the number of customers and consumers in the region, according to the report. In addition, CEBEs-related projects are included in the 10 priority projects among the 46 wide-area collaboration projects, and NSP as a CEBE is positioned as a project where the more the collaboration is formed, the more economies of scale can be expected.

#### **4.3 Relationship Between SDGs and CEBEs-Related Projects**

With regard to the relationship with SDGs, in recent years, many local governments in Japan have been positioning SDGs in their comprehensive municipal plans, and Sasebo City has set forth the “Sasebo Green Recovery Project” as an initiative to introduce solar panels and storage batteries to public facilities in FY2021, which also includes SDGs. The Sasebo Green Recovery Project consists of three main measures: (1) the supply of electricity to 27 evacuation centers in the city at the time of a disaster by installing solar panels and storage batteries; (2) the supply of electricity to facilities other than the 27 evacuation centers by using electric vehicles from car dealerships and cab companies; and (3) original support for the purchase of low-carbon mobility such as EVs for citizens. Through initiatives 1) through 3) above, the project aims to strengthen resilience and achieve carbon neutrality.

#### **4.4 Stakeholder Involvement in NSP and Initiatives in the Project**

In the course of our research, when we visited several municipalities participating in the NSWUA as a collaborative project to solicit their willingness to invest and participate in the project at the timing of the establishment of the NSP, we were not able to obtain their approval due to the difficulty of obtaining parliamentary approval and the complexity of the procedures, so the starting point was that Sasebo City was the first to invest in the project at the initial stage.

Initially, Sasebo City solicited investment from several municipalities participating in the NSWUA as a collaborative project at the timing of the establishment of the NSP, and visited them to see their intention to participate, but they were not supportive due to the difficulty of obtaining their council’s approval and the complexity of the procedures, so Sasebo City took the lead in investing in the initial stage. As for the investment ratio between the two co-investors, the Juhachi-Shinwa Bank and Pacific Power, Sasebo City wanted to take the

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<sup>23</sup> District Self-Governing Councils work to maintain, rebuild, or form local communities by supporting neighborhood associations, solving local problems, and revitalizing the community. In Sasebo, y, there are 27 councils have been established. Their management and activities are being developed according to the actual conditions of each district.

initiative to some extent and hold more than 50%. However, the bank in Japan was only allowed to hold up to 5% under the Banking Act, and if Pacific Power were to hold 45%, it would be necessary for it to have voting rights on its own.

## 5. Conclusions

This paper examines the relationship among stakeholders, regional energy governance, and the position of SDGs in municipal energy projects from the perspective of wide-area cooperation, focusing on NSP as a case study. What is unique about NSP's projects is that, first, in terms of returning profits to the community, the company is prioritizing economic efficiency, such as installing streetlights and other facilities in public facilities through the installation of energy-creating, energy-saving, and energy-storing equipment; second, it is prioritizing economies of scale, such as reducing costs through the intermediary supply model; and third, it is prioritizing the creation of a system to meet the needs of the community over employment. Finally, fourth, in relation to the SDGs, it became clear that the steady implementation and dissemination of existing projects is moving toward achieving the goals of the SDGs, even if not explicitly.

As future research topics, this paper are currently focusing on the Sasebo City, which is the central city for wide-area cooperation. In order to be able to operate CEBEs in a more sustainable manner while taking advantage of the benefits of wide-area cooperation, it is necessary to review the consensus-building process and the sharing of responsibilities, as well as to collaborate beyond the boundaries among governments by utilizing the strengths of each local government, sharing the information they possess, and exchanging resources. Next, in addition to the above, the future issue will be whether it is possible to create new added value in the region through wide-area cooperation. Finally, although this may be a somewhat long-term perspective, the NSWUA has set renewable energy as a priority project, but in order to utilize such wide-area cooperation as a solution to the problems of a society with a declining population, it may be necessary to take into account the need for regional development or decentralization.

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