

Locally-led renewable energy implementation for energy system transition in Korea: a case study of Jeju Special Administrative Province

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【問題・目的・背景】

Under the climate regime and SDGs, there is more interest in energy transitions around the world moving forward to renewable energy than ever before. Related policies and measures for introducing and expanding renewable energy over the mid- and long term toward energy system transition are accelerating globally. Whereas many of the policy initiatives and negotiations relating to energy and climate change are being undertaken at the national and international levels, in parallel many leading cities and towns are making their own decisions concerning their energy destiny by engaging in local climate and sustainable energy action –and their movements are beginning to have an impact (IEA, 2009, Hoppe et al., 2015, Mans, 2012, Laihanen et al., 2016).

In recent the Republic of Korea formulated its national energy policy stance of phasing out nuclear and coal power whilst emphasizing the expansion of renewables through expansion of decentralized energy system. The Jeju province in Korea has been promoting self-energy system utilizing local rich natural resource such as wind and proposed an ambitious target to replace 100% of the power supply in Jeju Island with renewable energy through increasing residents' participation in the local energy business and boosting related local industry.

Based on policy overviews and interviews with core stakeholders in Jeju province, this study aims to identify the characteristics of the policy and strategies of renewable energy promotion at a local level and further discusses the current challenges and barriers.

【研究方法・研究内容】

This study aims to identify the characteristics of the policy and strategies of renewable energy promotion at a local level and clarifies the roles of related major stakeholders as well as structure of their cooperation in promoting renewable energy business, and further

discusses remaining challenges and future directions. It targets the Jeju Special Self-Governing Province (Jeju province), an administrative district including nine inhabited and 55 uninhabited islands. It is home for 641,597 as of 2016 (Statistical information on MOIS home page). Jeju Island is the center of Jeju province which is located about 90 km south of the Korean Peninsula and the largest island of Korea with its size of area, 1,845 km² with about 70 km north-south and 35 km east-west.

In analyzing the features of the region - led renewable energy introduction policy for Jeju province in Korea, four aspects, (1) motivation, (2) main renewable energy resource, (3) renewable energy introduction and diffusion type, and (4) key stakeholders were focused.

It is based on literature reviews of journal papers, research reports and public documentation, and policy overview of government related documents as well as on-site hearing carried out in August, 2017 with core stakeholders including Jeju local government, government affiliated organizations, local research institutes, and etc. in Jeju, as listed in Table 1.

Table 1 Interviewee institutes

Institutes
Jeju Provincial Government
Korea Electric Power Corporation (KEPCO)
Jeju Techno Park
Korea Federation for Environmental Movements
Jeju Research Institute
Jeju University

【研究・調査・分析結果】

(1) Motivation of renewable energy policy implementation and promotion

The main motivations for renewable energy policy in Jeju Island can be summarized with three aspects, ① increasing energy demand due to population growth, ② promotion local green industry and economy and ③ preservation of its

clean environment. The details are described as below.

(2) Main renewable energy resources in Jeju island

The wind power was the major source in Jeju at present. The island has rich wind resources due to its geographically ideal conditions. The annual potential wind power electricity per total area that can be developed by major administrative districts in Korea is greatest in Jeju, both for on- and offshore (MOTIE and KEA, 2016a). As of 2017 approximately 270 MW of combined onshore and offshore wind power wind farms had been installed and entered operation in Jeju Island (KEPCO, 2017a).

(3) Renewable energy introduction and diffusion type

① Wind power projects at the early stage

Jeju government has implemented wind power-related projects and initiatives since the 1970s. In 1975, Jeju Island implemented the first wind power project in Korea, a 3kW wind turbine installation project. In 1998, the first commercial wind power enterprise (10 MW) commenced, in Hangwon, Jeju Island, and was supported by the central government as part of local renewable energy support (Jeju government, 2016). These wind power projects at the early stage revealed barriers and conflicts in promoting the related business in Jeju area. The issues mainly involved promoting business by large corporations, outflow of profits, unfair utilization of natural resources, conflict between winner and loser groups in wind business among local residents, damage to the natural environment, and inexperienced administration in the proceedings process.

At the heart of the problem as to why the Jeju Provincial Administration failed to actively respond to the conflict was the lack of appropriate laws and regulations, as at that time, although wind power generation differed from existing thermal or nuclear power generation business, no statutes reflecting its characteristics existed. The operators were interested in maximizing profits and were preoccupied by the new business field of wind power generation. They focused on securing agreements with residents or landowners as to the location of the site, whilst also not taking into consideration the need to improve public awareness of the project.

(2) Carbon Free Island by 2030 in Jeju Island and Publicization of wind resources

The need for establishing a fundamental point of view for wind resources has emerged through the lessons of early business. As the alias of ‘Samdado’, there is such cultural history with strong wind, in which Jeju is intertwined with its ecology that has to be fully understood in the context of carrying out any business related to the wind and designing to make profit from the business (Kim, 2008). In order to resolve the above-mentioned socio-cultural conflicts as regards the use of wind resources, the civic groups in Jeju area suggested to publicize the wind resource. In response, Jeju government commissioned Jeju University to conduct a study on the approval of the Jeju-style wind power project and announced plans to establish publicization of the wind resource in 2007. Accordingly, Article 221-2 of the ‘Establishment of Jeju Special Self-Governing Province and the Development of Free International City’ was revised on July 3, 2007, and obligates the approval standards and procedures for wind power projects to reflect the local characteristics of Jeju Island. Through this improvement of the legal system, the concept of wind public resources was applied to the wind power project, which was regarded as a positive step forward for existing regulations, which previously were not obligated to reflect the characteristics of wind power generation or the regional characteristics of Jeju Island.

In 2008, Jeju government announced the aim of its energy policy as increasing use of renewables (wind, solar, geothermal, biodiesel, bioethanol, biogas, etc.) to 20% in 2020 and to 50% in 2050. The plan was later revised and incorporated into ‘Carbon Free island Jeju by 2030 (CFI2030)’. The vision for ‘Carbon Free island Jeju by 2030 (CFI2030)’ was announced in 2012 for 100% renewable energy and electric cars within the island by 2030. The meaning of ‘Carbon Free’ in ‘Carbon-free Island’ is close to ‘Carbon neutral’, meaning to build facilities and produce electricity that can generate as much electricity by renewable energy as expected to be demanded in 2030 by maintaining existing thermal power plants at minimized operational level. CFI2030 was planned to be executed in three steps. The first step was a

demonstration pilot project in Gapa Island, which was an autonomous locally-led project aimed at 100% energy independence of an island, the first such instance in Korea and turned it into a laboratory for this ambitious initiative. This project closed down in 2016. Details are given in Box 1. The second step targets a 50% share of renewable energy by 2020. The third step is for Jeju Island to achieve 100% renewable energy and become a world-class carbon free and green growth city by 2030 (Jeju government, 2016).

(4) Stakeholders' role and cooperation structure

The CFI2030 of Jeju Island has been promoted in close cooperation with the central government, related organizations, research institutes, committees and civic group, as shown in Figure 1. In the expansion of renewable energy in the Jeju region, there is a slight difference in the viewpoints and strategies among the related organizations and institutions in the following three perspectives, leading by the government of Jeju under the support of the central government, attracting more large companies, or expanding business by local residents in a small scale. Ultimately, however, the goal of expanding the opportunities for local residents to participate in the project and maximizing the return of the profits of the project, thereby fostering the infrastructure industry and improving the quality of life, was emphasized in common.

【考察・今後の展開】

In promoting renewable energy business, Jeju local governments have taken a lead role, under central government support, and carried out several wind power projects, including a demonstration project on a smaller island by overseeing the design, investment and monitoring. Jeju government has endeavored to develop energy policies democratically, such as by raising the number of residents in the wind power industry, establishment of related public institutions, and establishment of a cooperation framework between related organizations. It is noteworthy that the government enacted the special laws and ordinances to publicize wind resource and share its profits with the

island by encouraging resident participation in business. Meanwhile, considering the characteristics of large-scale capital and technology-related wind power projects, the government has tried to attract companies with technology and capital, whilst also preventing capital outflows and ensuring local business side can participate.

It seems that there is still room for improvement in terms of how participation occurs. The renewable energy policy of Jeju focused especially on is wind power, and securing large-scale offshore wind technology is likely to be the key to realize the CFI2030 policy, while the use of other renewable energy sources is extremely limited. On the other hand, expansion and support of small-scale projects, such as photovoltaics, might help in terms of circulating profits using local-led businesses.

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Cooperation structure of stakeholders to expand renewable energy in Jeju Island

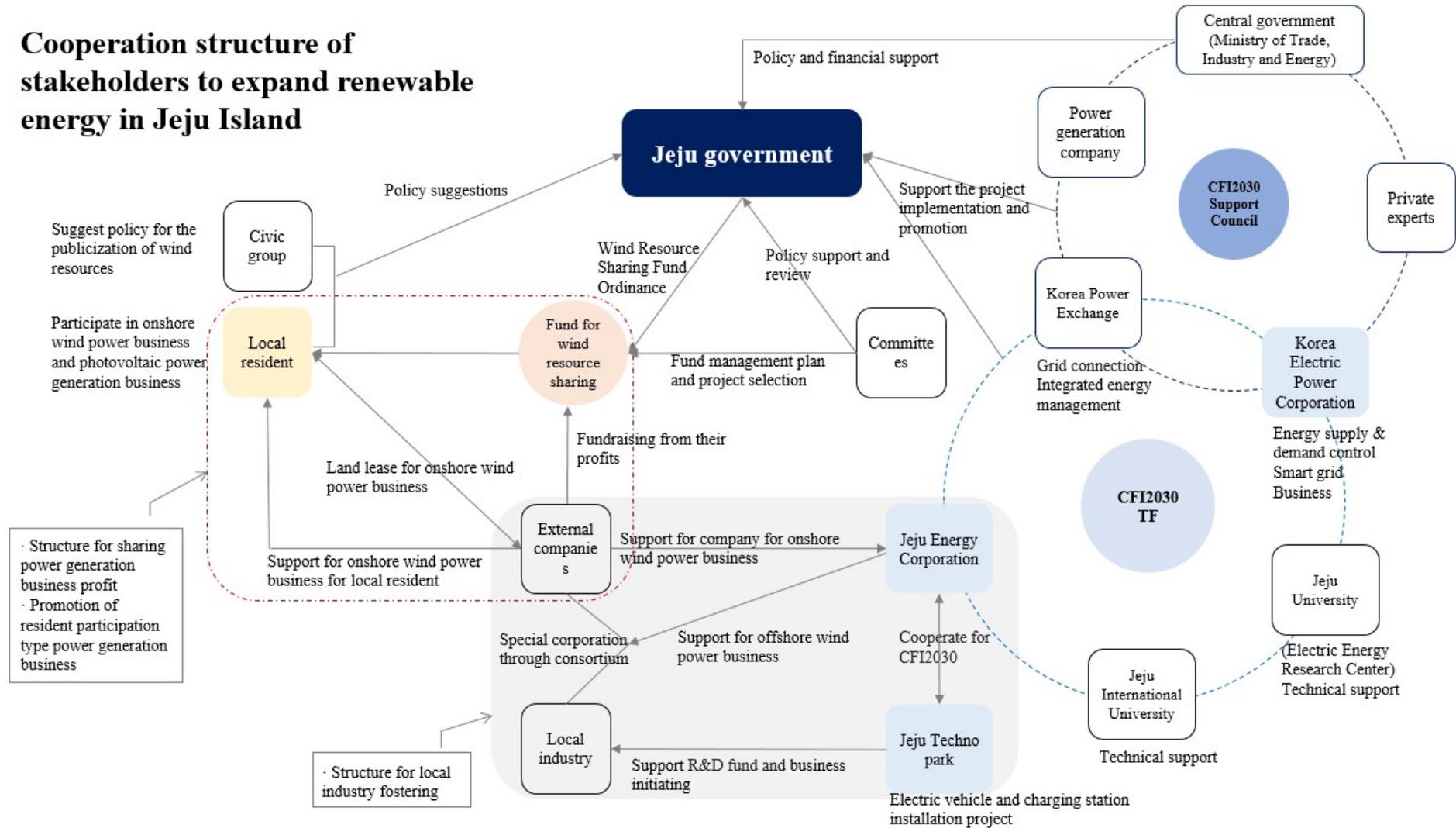


Figure 1 Structure of cooperation system of stakeholders for renewable energy policy
 (Source: depicted by the author)