

**Strategy for Developing Domestic Industrial Agglomeration toward a
Decarbonized Society**

**- Centering on the Status of Entry by Medium- and Small-sized Manufacturers
into the Renewable Energy Sector –**

Executive Summary

1. Objective and Perspective of This Research

(1) Objective of this research

In this research, a research committee was organized by experts from industrial agglomeration and SMEs with the aim of studying industrial clusters in Japan through three approaches: (1) keeping track of the potential of renewable energy and trends in each field based on a literature survey; (2) analyzing the actual situation of new business development by SMEs toward a decarbonized society based on a questionnaire survey; and (3) having a multifaceted study of the relationship between renewable energy and the regional economy and industry by each member of this research committee. Finally, we present the conditions for revitalizing industrial agglomeration centered around the renewable energy sector.

(2) Perspective of this research

Two viewpoints underlie the perspective of this research. One is the viewpoint of regional commitments to decarbonization. Specifically, it refers to various commitments to reducing CO₂ emissions, commitments to establishing a sound material-cycle society, and the construction of renewable energy bases. The other is the viewpoint of commitments by companies involved in machinery in regions to renewable energy equipment, and commitments to forming renewable energy industrial clusters.

2. Findings Obtained from a Questionnaire Survey

**(1) Status of entry by medium- and small-sized manufacturers into the renewable
energy equipment market**

A questionnaire survey conducted by the Economic Research Institute of small- and medium-sized manufacturers revealed that they are less willing to enter the renewable energy equipment market. Contrary to it, 13 %, 9.3 %, and 7.9 % of the respondents mentioned three fields, photovoltaic power generation equipment, wind power generation equipment, and medium- and small-scale hydroelectric power generation equipment, respectively, as markets they have already entered or are planning to enter.

**(2) Challenges to entry by medium- and small-sized manufacturers into the
renewable energy equipment market**

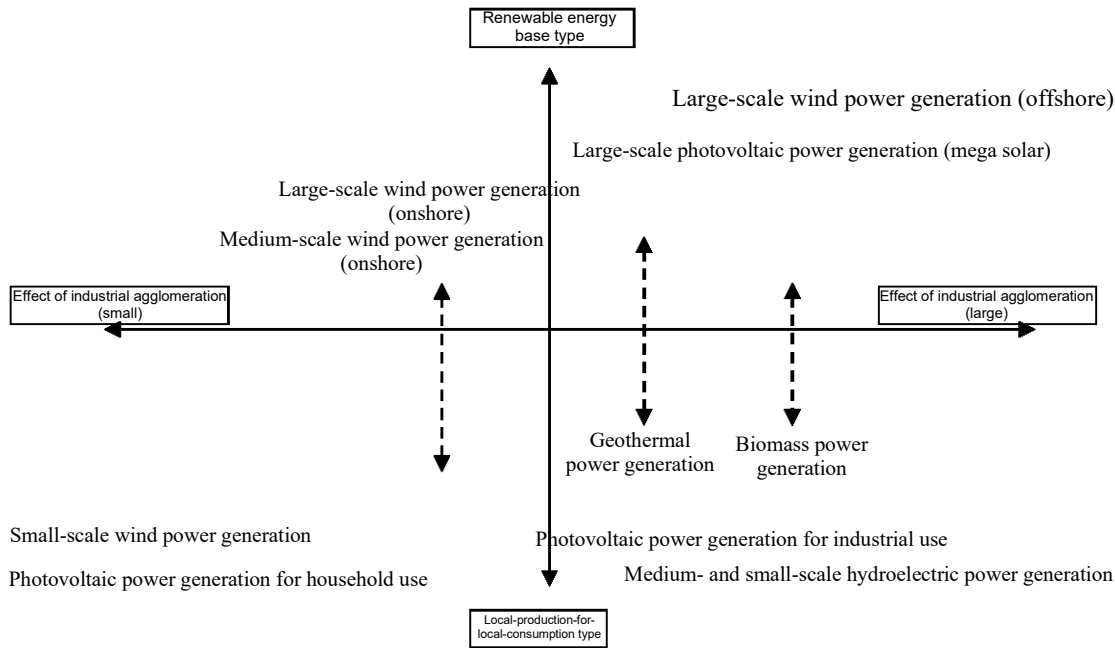
As described above, the questionnaire survey showed that most of the medium- and small-sized manufacturers do not enter the renewable energy equipment market. The factors contributing to it are i) internal issues in selling and receiving orders for renewable energy equipment (internal factor) and ii) support and measures to expand sales and orders for renewable energy equipment (external factor). We analyzed these two factors using a co-occurrence network diagram. As a result, first, many medium- and small-sized manufacturers consider mass production to be difficult on the renewable energy equipment market. Second, many medium- and small-sized manufacturers find it difficult to enter the market because they lack their own management resources, such as knowledge about the renewable energy sector and the human resources necessary for it. We focused on these two points. And we reached the conclusion that the “perception gap” of medium- and small-sized manufacturers in the growing renewable energy equipment market was attributable to a lack of information about the market, technology, measures, regulations, and other factors related to the renewable energy market.

3. Points of Measures to Revitalize Industrial Agglomeration Centered Around the Renewable Energy Equipment Sector

(1) Relationship between the renewable energy sector and the effect of industrial agglomeration

Based on the results of the study conducted by the committee for this research, a diagram of the relationship between the renewable energy sector and the effect of industrial agglomeration is shown in Figure 0.1. As shown in this diagram, we reached the conclusion that many programs in the renewable energy sector still face challenges but have the potential for bringing about a positive effect on domestic industrial agglomeration.

Figure 0.1 Relationship between the renewable energy sector and the effect of industrial agglomeration



(2) Basic conditions for revitalizing industrial agglomeration centered around the renewable energy sector

Finally, as a conclusion of this research, we presented the basic conditions for each revitalizing industrial agglomeration centered around the renewable energy sector in each region as follows:

< Basic conditions for revitalizing industrial agglomeration centered around the renewable energy sector >

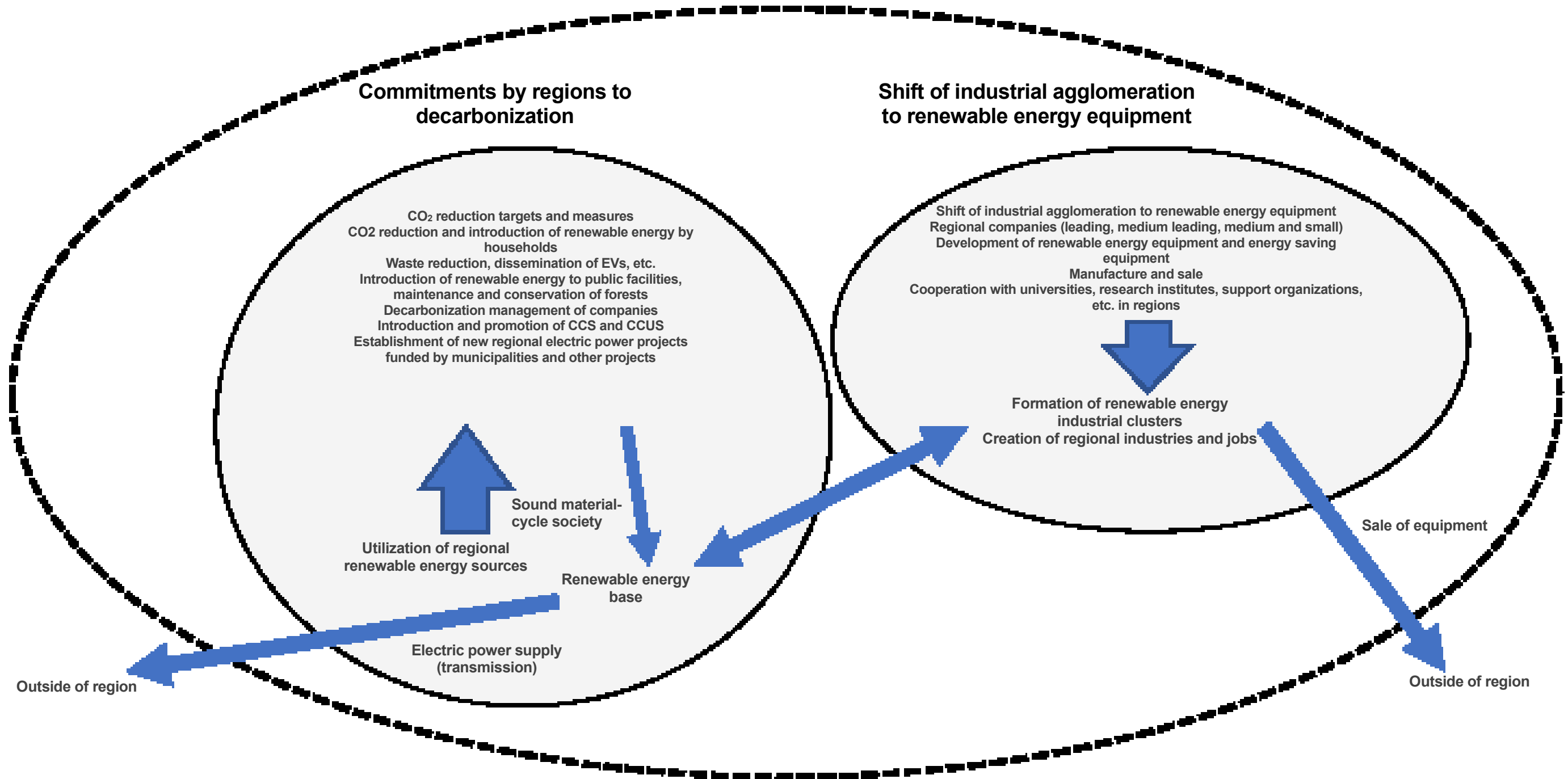
- [1] Selecting and combining programs of the renewable energy sector consistent with industrial and employment policies of communities
- [2] Building a supply chain for the manufacture, operation, etc. of renewable energy equipment
- [3] Promoting cooperation between regional industries, such as agriculture, fisheries, and forestry, and the renewable energy sector
- [4] Establishing the profitability of renewable energy businesses using the FIP scheme
- [5] Developing human resources for renewable energy by universities, technical colleges, technical high schools, etc.
- [6] Providing local medium- and small-sized companies with information on renewable energy businesses, product development subsidies, etc.
- [7] Forming industrial clusters for promoting the sustainable growth of the renewable energy industry
- [8] Establishing a management strategy with an eye on creating shared value (CSV) for the entire industry, including medium- and small-sized companies

4. Future Research Issues

In this research, we studied industrial agglomeration through three approaches, [1] literature survey, [2] questionnaire survey, [3] multifaceted study of the relationship between renewable energy and the regional economy and industry by each member of this research committee, and presented the basic conditions for revitalizing industrial agglomeration centered around the renewable energy sector. This time, however, it was not possible to conduct an interview survey in each region due to the COVID-19 pandemic. Thus, we desire to conduct in the future an interview survey on the progress of renewable energy equipment and the promotion of industry in each region with the aid of renewable energy equipment, while keeping an eye on the status of the containment of the COVID-19 pandemic. We also desire to conduct a survey of efforts by medium- and small-sized companies toward decarbonization management and CSV with emphasis placed on mainly “commitments by regions to decarbonization” of the perspective of the research shown on the left side of Figure 0.2.

Figure 0.2 Perspective of this research

Regional economic society



Notes) CCS: Stands for Carbon dioxide Capture and Storage. CCS means separating and capturing CO₂ discharged from industrial activities before release into the atmosphere and storing it in a stable manner for a long time by segregating it in the ground, seabed, etc.

CCUS: Stands for Carbon dioxide Capture, Utilization and Storage (separation, capture, effective use, and storage of carbon dioxide). CCUS means separating and capturing the carbon dioxide contained in the emissions discharged from thermal power plants, factories, etc. and making effective use of it as a resource or storing it in a stable underground layer.

Source) Prepared by the Economic Research Institute by reference to “Nikkei Glocal” No. 413 (2021), p. 6, and Minoru Hosaka (2022), p. 35.