Department of Management and Information Sciences	Key words	Renewable energy, Regional economy, Corporate Environmental and Social Governance, Corporate Finance

Ph.D in Economics / Professor

Takeharu Kikuchi

Education

College of Arts and Sciences, University of Tokyo, The Environmental Change Institute, University of Oxford (Master's Program), Graduate School of Economics, Kobe University (Doctoral Program)

Professional Background

Development Bank of Japan, Green Finance Organization, The Japan Economic Research Institute

Consultations, Lectures, and Collaborative Research Themes

The introduction of renewable energy (Fukui Prefecture Renewable Energy Introduction Advisor) Sustainable Community Planning, Corporate Environmental Social Governance

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Main research themes and their characteristics

「Quantitative Analysis of Renewable Power Projects' Regional Economic Revitalization」

Accelerating the introduction of renewable energies such as solar power, wind power, small-scale hydropower and biomass are currently the top priority in the fight against global warming. Also, their effect on stimulating local economies is attracting attention, as they generate employment, tax revenue and profit in the region by utilizing local natural energy sources. Studies on the effect of renewable energy on regional economic revitalization are gradually accumulating, with most of them applying input–output analyses.

Kikuchi (2019) conducts a comparative analysis of following two regions: Ibaraki Prefecture, which currently boasts the largest amount of renewable energy installations in the 5 years since the Feed-in-Tariff was introduced in Japan in 2012, and Tokyo, which has the least amount in the Tokyo Electric Power Company districts. Ibaraki Prefecture was 6.6 times greater than Tokyo in terms of installed renewable energy capacity, but the results showed that the regional economic revitalization effect was nine times greater than that of Tokyo, or 804.6 billion yen in monetary terms. This is due to the differences in the different types of renewable energy generation and the differences in the regional industrial structure.

Kikuchi (2021) makes calculations and comparisons for each of the 47 prefectures in Japan, using the regional input-output table. The results reveal, among other findings, that the construction and operation of unused wood biomass power plants of the same scale elicit nearly fourfold difference in regional economic effects between Hokkaido and Tokyo. Varying results are a reflection of the industrial structure in a region and the rate of self-sufficiency of related industries. In addition, when comparing the effect of regional economic revitalization by introducing renewable energy per kWh by energy source, the results are in the order of small hydro, unused wood biomass, industrial solar, and onshore wind. It was determined that the economic effect of the introduction of four types of renewable energy is sufficiently large enough in comparison to the value of electricity.

(Unit: million yen)

	Industrial Solar (2000kW)		Onshore Wind (20000kW)		Small Hydro (600kW)		Unused Wood Biomass (5000kW)	
1	Saga	816	Saga	10,755	Saga	1,357	Hokkaido	16,305
2	Hiroshima	629	Ibaraki	10,423	Okinawa	1,270	Gifu	15,948
3	Tochigi	623	Aomori	10,391	Shimane	1,234	Akita	15,714
4	Miyazaki	594	Osaka	10,248	Miyazaki	1,234	Nagasaki	15,406
5	Miyagi	584	Okinawa	9,871	Kagawa	1,228	Miyazaki	15,262
43	Nara	503	Shimane	7,184	Fukui	1,120	Chiba	6,106
44	Kumamoto	503	Nara	7,169	Oita	1,120	Saitama	5,875
45	Saitama	503	Tokushima	7,102	Tokushima	1,117	Kanagawa	4,726
46	Tokushima	491	Fukushima	7,040	Fukushima	1,101	Miyagi	4,673
47	Tokyo	479	Oita	6,881	Tokyo	1,006	Tokyo	4,377

Source: Author

Fig.1 The effect of regional economic revitalization in each prefecture in descending order【Source: Kikuchi (2021)】

Fig.2 Wood biomass power plant in Ono City, Fukui Pref. (Source: photo by the author)

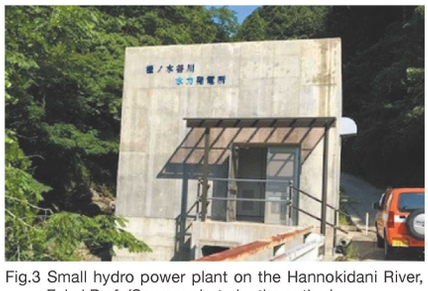

Fig.3 Small hydro power plant on the Hannokidani River, Fukui Pref. (Source: photo by the author)

Major academic publications

Ozaki H, Kikuchi T, Takegaraha K (2015) "Renewable Energy and New Growth Strategies" ,Energy Forum (in Japanese).

Kikuchi T (2019) Measuring the value of renewable power project on regional economy: Comparison between Ibaraki and Tokyo of Japan, Sustainable Management. No. 18, 34-.45 (in Japanese).

Kikuchi T (2021) "Quantitative Analysis of Renewable Power Projects' Regional Economic Revitalization Using Input–output Table Data from Japan's 47 Prefectures"『Journal of Environmental Information Science』 Vol.2021 No1, p8-19.