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# Research Report

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**Organization** (at the start of the grant period): Nagasaki University

**Title of Research:**

Small-Medium size Enterprises’ (SMEs) Preference on Carbon Credit of Forest Management: A Choice Experiment study in Nagasaki Prefecture

**Purpose of Research:** (200 words)

The acceleration of decarbonization activities in Japan to achieve the pledge of the country net zero carbon emission by 2050, 991 local governments announced their commitment (MoE, 2022). Japan Decarbonization target is 46% reduction by FY2030 from its 2013 level, while the business response positively and moving ahead to support this target. In the other hand, Japan has significant percentage of forest cover—67.2% of the entire country—but the country's forest management appears to be stagnating. It is essential to explore innovative strategies, specifically the potential of forest carbon credits, to revitalize this sector. Therefore, this study aims to investigate whether companies in particular, SMEs are aware of emission reduction scheme of carbon credit of forest management. Additionally, what is the credit buyer’s (SMEs) demands towards the attributes of the forest carbon credit - credit price, location, social development of local people, ecosystem services potential improvement, and achieve SDGs - in order to be aligned with SMEs’ goal in emissions reduction. This study elucidates the perception of SMEs and their willingness to pay (WTP) for forest management credit.

**Content/Methodology of Research:** (400 words)

This study used a discrete choice experiment (DCE) to investigate SMEs preferences across the determined attributes. The method used is mailed questionnaires and online survey of SMEs in Nagasaki prefecture. Survey data collection between May 2022 – July 2023. Interviews and pre-surveys conducted as preliminary research and total sample of 58 SMEs were obtained to the subsequent data analysis.

The distribution of SMEs industry sector: Manufacturing 34.48%, Wholesale and retail 17.24%, Services 15.52%, Construction 12.07%, Restaurant and lodging 5.17%, Financial 3.45%, Transportation 3.45%, Education 1.72%, Heat Supply 1.72%, and Medical, Health Care, & Welfare 1.72%. Further, the small-sized businesses is 59% and Medium companies is 41% of the total sample. While SMEs primary market is 62.07% is in Nagasaki Prefecture, within Kyushu is 8.62%, within Japan 18.97% and 6.9% market in Overseas.

The awareness of SMEs toward carbon credit dominantly aware and they are interested in the carbon credit scheme (Fig. 1), however, the SME has slight interest in purchasing the credit in the present (Fi. 2)



Fig. 1 SME awareness of Carbon Credit

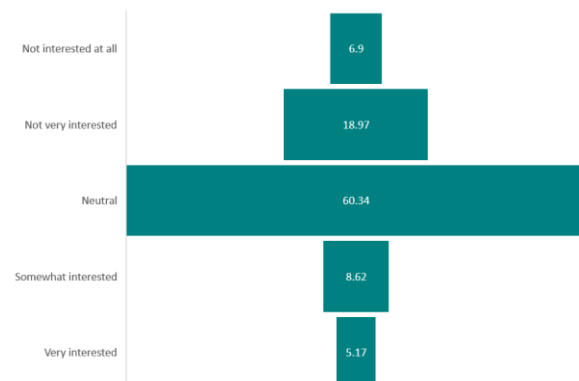


Fig. 2 SME desire to purchase the credit

It is discovered that the factors influence whether company is willing to purchase the carbon credit which result statistically significant are Type of the credit, Voluntary manner, and SMEs Actively engaging in CSR within the company. Further, the study shows based on type of credit in J-Credit system and methodology, SMEs in Nagasaki interested to offset their carbon emission through Renewable energy with 31.58%, transforming energy saving equipment and machinery 28.07%, and noted that only 14.04% of the SMEs stated their interest forest management. This implies that the SMEs merely focus on reducing or offsetting their emissions potentially within the company activities and chain. On the other hand, 26.32% SMEs stated uninterest in any carbon credit mechanism.

Thus, we studied the demand of carbon credit to estimate the demand using choice experiment on Forest carbon credit, it is tested that attribute coefficients of multinomial logit and random parameter logit model fitted and demonstrated that “Credit Price”, “Location,”, and “SDGs” attributes are significant. This indicates that SMEs demand the forest carbon credit to accomplish their preference considering purchase the forest carbon credits by the price, location of the projects, and number of SDGs that can be achieved through the forest management project. Therefore, their wtp based on location of the project is 6,191 ¥ (roughly \$41), and WTP to obtain increased number unit of SDGs attained through the forest carbon credit project is 933 ¥.

### **Conclusion/Observation** (200 words)

The awareness of the SMEs in Nagasaki prefecture toward their categorized is in the infant phase. Despite majority of SMEs have heard of the information of carbon credit but they have no specific knowledge about the mechanism, SMEs appear interested in new mechanism to take initiative emission reduction from their business. The study also found that 50.88% of SMEs are aware of the SDGs goal and setting SDG goals number 12, 7, and 8 to be their priority. This implies the readiness of SMEs to move forward toward decarbonization. Although SMEs expressed challenges of insufficient budget, the CEO/manager of SMEs have positive attitude to transform their business.

The study result employee SMEs preference toward the important attributes of the forest management carbon project would attain from purchasing the credit. The feasibility of boosting the demand of forest management project in Nagasaki prefecture based on the credit price, the location within the prefecture, and number of SDGs goal unit. SMEs have strived in their business while take consideration on efficient alternatives to offset their emissions. It is crucial for SMEs to measure their affordability in purchasing credit monetary. SMEs willingness to pay for forest carbon credit is 933¥ - 6,191¥.