

Sustainable Systems of Municipal Solid Waste Management in Depopulated and Aging Areas of Japan

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[Abstract]

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Municipalities in areas with depopulation and aging in Japan are more likely to be forced to reduce the cost of their municipal solid waste management due to financial tightness. We reviewed the conventional incineration system to manage municipal solid waste and proposed an alternative management system, which could contribute to solving technical and financial challenges in depopulation and aging areas.

We projected that the proportion of used disposable diapers in combustible waste would increase in both areas where the amount of used disposable diapers increases or decreases due to the declining population and aging. The proportion of used disposable diapers is expected to rise to about 20% in areas with depopulation and aging, and it is necessary to properly manage used disposable diapers from the viewpoint of recycling as well as sanitation.

We proposed bio drying and production of solid recovered fuels as the alternative management system in depopulation and aging areas, and confirmed the effectiveness of the system using an indicator called "effective energy use." We also demonstrated on a lab scale and pilot scale that bio drying technology was applicable even if the physical composition of combustible waste may dramatically change in the future.

In addition to showing the effect of reducing management costs by outsourcing to the private sector, we designed a decision-making flow for selecting business options to manage municipal solid waste including outsourcing to the private sector. As the population declines and the population ages, tax revenues will decrease and the number of areas where public finances will be tight will increase. It is expected that the results of our study will be utilized as scientific references.

[References]

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