

Summary of Session Theme Talk

Waste Management System and Energy Recovery: A Japanese Casestudy

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Japan has established a waste management system to reduce final disposal as the country has limited lands available to maintain waste disposal sites. Incineration is a key component in the overall waste management system. However, maintenance of incinerators is expensive. As such, improving the overall efficiency of the system is of high priority. Improving the waste recovery system has been identified as one such concepts in the context of overall system efficiency. At present, each municipality has its own incinerator(s). Maintenance of such facilities is a burden, especially for smaller municipalities. The conceptual idea here is to reduce the number of incineration and improve waste transportation/logistics. Some municipalities can afford to have incineration facilities of greater capacity. This will have several advantages. Instead of maintaining their own incinerators, smaller municipalities can send their waste to larger facilities and cut down on the cost of construction or maintenance of incinerators. Large municipalities can construct incinerators with greater capacity in scarcely available lands for such purposes. However this model will bring difficulties for municipalities managing larger areas. Until now the municipalities with large areas located incineration facility in the center of the city. But in the new system, the municipality may require to bring waste to the next city. This can elevate the transportation cost for municipalities with large areas.

The new big facility brings another point which is energy recovery. Once the facility becomes large, it can have high efficient power generation. The waste treatment facility generates 100% renewable energy. Japanese government set a law which big electricity company has to buy renewable energy with high price. The waste treatment facility can sell the company with high price and reduce the burden of the taxpayer. One municipality is constructing waste management system which includes not only waste incineration facility but also sewage treatment facility. They mix sludge from the sewage treatment facility and kitchen garbage and get methane from fermentation system. Methane fermentation can produce methane gas, but it can also produce waste water and residue. Especially the waste water includes higher nitrogen content and can be utilized as fertilizer. However, it is difficult to utilize the fertilizer because Japan does not have much agricultural lands and agriculture sector cannot accept the entire production. Sewage treatment facility can treat waste water because the facility locates next to the fermentation chamber.

Keywords: Waste management, Incineration facility, Municipality, Recycle, Energy recover