

Separate Collection System of Recyclables and Biowaste Treatment and Utilization in Metropolitan Area Finland

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Abstract : Separate collection system for recyclable wastes in the Helsinki region was ranked second best of European capitals. The collection system includes paper, cardboard, glass, metals and biowaste. Residual waste is collected and used in energy production. The collection system excluding paper is managed by the Helsinki Region Environmental Services HSY, a public organization owned by four municipalities (Helsinki, Espoo, Kauniainen and Vantaa). Paper collection is handled by the producer responsibility scheme. The efficiency of the collection system in the Helsinki region relies on a good coverage of door-to-door-collection. All properties with 10 or more dwelling units are required to source separate biowaste and cardboard. This covers about 75% of the population of the area. The obligation is extended to glass and metal in properties with 20 or more dwelling units. Other success factors include public awareness campaigns and a fee system that encourages recycling. As a result of waste management regulations for source separation of recyclables and biowaste, nearly 50 percent of recycling rate of household waste has been reached. For households and small and medium size enterprises, there is a sorting station fleet of five stations available. More than 50 percent of wastes received at sorting stations is utilized as material. The separate collection of plastic packaging in Finland will begin in 2016 within the producer responsibility scheme. HSY started supplementing the national bring point system with door-to-door-collection and pilot operations will begin in spring 2016. The result of plastic packages pilot project has been encouraging. Until the end of 2016, over 3500 apartment buildings have been joined the piloting, and more than 1800 tons of plastic packages have been collected separately. In the summer 2015 a novel partial flow digestion process combining digestion and tunnel composting was adopted for source separated household and commercial biowaste management. The product gas from digestion process is converted in to heat and electricity in piston engine and organic Rankine cycle process with very high overall efficiency. This paper describes the efficient collection system and discusses key success factors as well as main obstacles and lessons learned as well as the partial flow process for biowaste management.

Keywords : biowaste, HSY, MSW, plastic packages, recycling, separate collection

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