

Fact-finding Survey and Promotion Support Project for the Energy Creation and Saving Measures in Sewage Sludge		
Year of Research	2012	Establishment of energy and resource recycling
<p>(Purpose)</p> <p>The sewage sludge generated in sewage treatment process is an abundant resource of biomass which is expected to be used for renewable energy. However, there are not so many case studies of the conversion of sewage resources to energy, and the related knowledge and know-how are limited to business operators, and as such it is important to examine advanced case studies for the benefits of this technology in order to promote horizontal development. In order to approach energy creation and saving measures for sewage works in an integrated manner, it is important to study long term measures for the reduction of greenhouse gas emissions with comprehensive countermeasures. In this project, the effect of the introduction of energy technology is examined with the aim of promoting the technology, and benchmarking for energy saving measures is also studied. In addition to this, greenhouse gas emissions were reviewed.</p> <p>(Results)</p> <p>(1) Effect verification and promotion of the introduction of energy technology</p> <p>The following information was collected through interviews with sewage works managers at plants that have introduced energy technology and through field surveys, which looked at factors for the introduction of the technology, the review process for the introduction, operation conditions and benefits of introduction. The following five technologies were in the scope of this investigation.</p> <p>(1) Power generation technology using digestion gas (gas engine, fuel cell, and micro gas turbine)</p> <p>(2) Solid fuel technology (low-temperature carbonization, medium-temperature carbonization, and pelletization drying)</p> <p>(3) Acceptance of other biomasses</p> <p>(4) Storage battery technology</p> <p>(5) Small hydroelectric generation technology</p> <p>The case studies were studied for the effect of introduction of the technology. In addition, explanatory meetings were held at 6 locations throughout Japan to explain the effects and effectively convey the information. 638 participants attended.</p> <p>(2) Review of benchmarking</p> <p>The current status of energy consumption and energy saving efforts at each treatment plant were surveyed to establish a benchmarking for comparisons. The energy used by each water treatment system was identified to clarify the relationship with the average daily flow.</p> <p>(3) Review of greenhouse gas emissions</p> <p>In order to reduce greenhouse gas emissions from sewage treatment plants, the calculation method for greenhouse gas emissions was refined to obtain an accurate figure for greenhouse gas emissions through surveying and analyzing actual emissions. The following fields were considered to refine the calculation.</p> <p>(1) Greenhouse gas emissions from the incineration of sewage sludge and carbonization</p> <p>(2) Greenhouse gas emissions generated from the sewage treatment process</p> <p>New findings for the greenhouse gas emission factor of N₂O were obtained, and N₂O emission factors are given for each water treatment system. The N₂O emission factor for the improved-type incinerator is also given.</p> <p>※ Policy support services by Sewerage and Wastewater Management Department, Water and Disaster Management Bureau, Ministry of Land, Infrastructure, Transport and Tourism Inquiries ; Resource Recycling Research Department, Takashi Ishida, Shuichi Ochi, Yasutada Ogawa [03-5228-6541]</p>		
Key words	Energy technology, benchmarking, emission factor of N ₂ O	