

Elucidation of the generation behavior of particulate and trace elements during the biomass combustion process

Background

Most of the primary energy is fossil fuels such as oil, coal, and natural gas



Fossil fuel disadvantages

- Limited resources
- Emission of CO₂

Biomass is gaining attention as a carbon-neutral energy source to replace fossil fuels

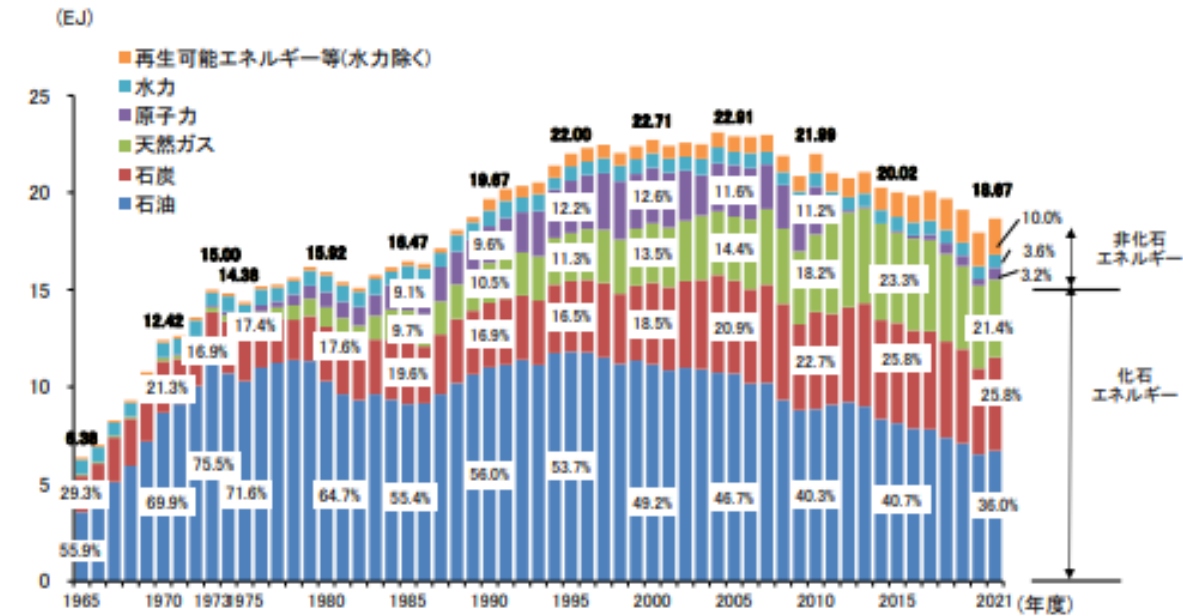
Biomass disadvantages

- Low energy density
- containing adhesive ash (alkali metals, alkaline earth metals)
 - Heat transfer hindrance due to adhesion to furnace walls and pipes, leading to reduced power generation efficiency
- PM2.5 (Particulate matter less than 2.5 μm) emissions
 - Medium to long-term negative impacts on ecosystems



Purpose

Elucidation of the generation behavior of particulate and trace elements during the biomass combustion process



Changes in primary energy supply in Japan

出典：環境省，資源エネルギー庁，令和5年度エネルギー白書

Purpose

1. Proximate analysis and ultimate analysis of samples, ash component analysis using X-ray Fluorescence (XRF)
2. Determination of combustion rate and gas analysis of biomass using drop tube furnace (DTF)
3. Particle sampling using low-pressure impactor (LPI) in biomass combustion experiments in DTF
4. Trace element analysis by particle size using XRF

