

## **The role of material flow indicators in reducing carbon emissions in Japan**

Topic: Input-Output Analysis: Sustainable Production and Consumption Policies - XI

Author: Sho HATA

Co-Authors: Keisuke NANSAI, Kenichi NAKAJIMA

In Japan, improvements in material flow indicators (MFIs) have helped facilitate the transition to a more sustainable material-cycle society. However, it is uncertain whether further improvements in MFIs would contribute significantly to Japan's journey toward carbon neutrality. We developed the structural decomposition analysis that identifies the key change drivers in MFIs and carbon footprints. Our results reveal that while changes in the supply chain and fixed capital formation led to improvements in two MFIs (resource productivity and material circularity), these same changes also resulted in an increase in emissions. To address this conflict, producers need to recognize the nexus between material consumption and carbon emissions and manage both in an integrated manner.