

## **Global carbon footprints: a detailed look at affluence and technology effects**

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

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Global efforts are needed to reduce CO<sub>2</sub> emissions and guarantee a safe climate system that supports global sustainable development and wellbeing. Understanding drivers of global CO<sub>2</sub> emissions is of great importance as the world strives to achieve global climate mitigation goals. Using structural decomposition analysis (SDA) we identify the key drivers behind changes in global and regional CO<sub>2</sub> emissions from 2000 to 2014. We find that growth in global CO<sub>2</sub> (+10.8 GtCO<sub>2</sub>) emissions was driven by increasing affluence (+14.3GtCO<sub>2</sub>) which outpaced the downward influence of changes in technology (-9.2GtCO<sub>2</sub>). Global results, however, mask considerable regional heterogeneity and different dynamics at the country level. The affluence effect was predominantly driven by capital investments in developing and emerging economies. In high income regions, technological improvements were strong enough to offset the positive pressures from increasing affluence. In these countries changes in population and trade structure were more important drivers than affluence. Although some countries/regions (e.g. EUR) demonstrate continuous and consistent emissions reductions these efforts need to increase considerably to reach climate goals.