

The impact of renewable energy diffusion on European consumption-based emissions

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The amount of carbon embedded in the final consumption of goods and services in a country depends on the amount of goods and services consumed and the emission intensity of the production processes of domestically produced and imported intermediate and final goods. A reduction of consumption-based emissions can be achieved from both sides, a reduction in total consumption and a reduction in the emission intensity of the production processes. EU consumption-based emissions are calculated using a combination of a multi-regional input-output (MRIO) system and a dynamic macro-economic input-output model that can be used to project the MRIO system. The global diffusion of renewable energy technologies (PV and wind), which is modeled using the concept of learning curves, has a significant impact on the development of the EU28's consumption-based carbon emissions between 2010 and 2020. While the EU28s final demand continues to increase, emissions embedded in the goods and services consumed within the EU decrease in a global renewable energy diffusion scenario.