

## How existing technologies can contribute to reducing global CO2 emissions

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Regional differences of sectoral energy intensities are large, indicating that a convergence of global technology levels towards best practice across the globe holds a huge potential for reducing emissions of global greenhouse gases (GHGs). This paper aims to assess the GHG mitigation potential of converging technological efficiency in terms of CO2-emissions in the industry sectors, building on multiple sectoral input intensities calculated from the World Input-Output Database (WIOD). We develop and apply an innovative analysis framework based on linear optimization of Multi-Regional Input-Output data. Hence, we ensure consistency in supply chains and upstream effects in higher order layers caused by technological changes to be regarded. Neglecting possible rebound effects, we find that even making median sectoral technology accessible in all regional industry sectors across the world could reduce global carbon dioxide emissions significantly, in the order of multiple gigatonnes (Gt). Highest reduction potentials are localized in a small, specific set of sectors consisting of "Coke, Refined Petroleum and Nuclear Fuel", "Chemicals and Chemical Products" and "Basic Metals and Fabricated Metals" accounting for more than 60% of total reduction. On a regional level, largest reduction potentials can be found in China, India, Russia and the US.