Environmental impacts of capital formation

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The impacts of infrastructure development are a well-known driver of economic activity, associated resource use and environmental impact. In National Accounting, gross fixed capital formation (GFCF) constitutes a substantial share of the total final demand of goods and services, both in terms of monetary turnover and embodied resources. Further, a large share of todayâ€™s developing countries are expected to build up their infrastructure in the coming decades, and climate change mitigation scenarios entail significant investment strategies starting before 2020. A deeper understanding of capital investments could therefore provide a valuable insight for further energy and climate research. Despite this, there has been relatively little focus on capital in the environmental scientific literature.
In this article, we study the structure of GFCF and the environmental impacts associated with it on a global scale and link it to measures of development, using input-output analysis and the EXIOBASE EU KLEMS databases. We find that the share of GFCF as part of the total carbon footprint varies a lot more across countries than GFCF as a share of gross domestic product, and that countries in early phases of development generally tend to invest in dirtier assets than developed countries. By performing a structural decomposition analysis, we assess the relative importance of investment structure and input-output multipliers for the difference in carbon intensity of capital assets, and find that the structure of investments plays a larger role for developing countries than for developed countries.