

Construction subsystem and carbon dioxide emissions

Topic: Environmental input-output modeling V

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Global construction sector activities expanded exponentially during the last decades. This led to a steep increase in the sector's contribution to global warming as construction processes are greenhouse gas intensive, both through the extraction and production of materials as well as through construction activities.

We analyse the total, i.e. direct and indirect, carbon dioxide emissions of the construction sector in 186 countries, using a global multiregional input-output framework and introducing the concept of emissions embodied in final demand (EEFD). The results show that the total emissions of the global construction subsystem are three times higher than its direct emissions, and that 19% of these emissions are embodied in imported inputs. China, USA, Japan, India, and Russia together make up two thirds of the total global CO₂ emissions of the construction sector. On a per-capita basis, small countries where the construction sector has developed considerably dominate the picture, and many of their emissions are embodied in inputs imported from outside of their economy.

We discuss the concept of EEFD and compare it to the concept of emissions embodied in consumption (EEC). The significance of the construction sector is demonstrated by comparing it to the total national carbon footprint from both perspectives.