Measuring Embodied Emission Flows for the Interdependent Economies within China

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Author: Martin Soeren Lindner
Co-Authors: Dabo Guan, Klaus Hubacek

In the past 30 years the power sector in China has undergone rapid growth. 80 percent of the capacity stems from firing coal; and since 2005 China has built approximately 1.5 GW of coal-fired power plants weekly. While energy consumption tripled between 2002 and 2008, CO2 emissions from China's power sector currently accounts for 35 to 40% of all emissions from fossil fuel combustion and contributes to China's high energy intensity and high emissions. Decarbonising regional power sectors would thus be a fundamental contribution to counteract global climate change and China is self-motivated as well as pressured by international communities to transform its economy towards low carbon technologies. Prior to Copenhagen the country announced to place its climate change commitment of "reducing carbon intensity by 40% to 45% by 2020 relative to 2005 level" in its forthcoming 12th and 13th 'Five-Year' Plan. Decarbonisation in the power sector is a key to accomplish these targets. In this paper, firstly we develop a Chinese domestic multi-regional input-output (MRIO) model, which allows us to assess key drivers of energy demand and CO2 emissions in regional power sectors in China. Secondly, we integrate a multi-regional bottom-up technology-option model into the power sector of our MRIO model, which evaluates technology differences and possible pathways to decarbonise the power sector in different Chinese regions.