

Macroeconomic impacts of carbon capture and storage in China

Topic: CGE and econometric input-output modelling 1

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Carbon capture and storage (CCS) is a key technology for reducing greenhouse gas emissions. However, the energy requirement of a CCS facility is so large that in order to accommodate CCS on all its fossil fuel power plants by 2050 a country will need to build about 20 percent more power stations than it otherwise would have done. With this in mind we analyze macroeconomic consequences of a large scale introduction of carbon capture and storage (CCS) in the leading coal consumer in the world, China. To conduct the analysis we modify and extend the DRC-CGE, a macroeconomic model of the country, by disaggregating the electricity sector and introducing the CCS option on coal and gas power plants. We allow CCS to emerge endogenously in response to a national carbon constraint. Contrary to our hypothesis we find that if CCS is introduced the country will need fewer power plants. The reason is that costs of CCS are carried over to consumers in the form of higher prices of electricity and electricity intensive products. The macroeconomic costs of introducing CCS are surprisingly small, only around 2 percent for a 40 percent CCS penetration.