Structural Similarity Analysis based on the Network Characteristics of Sectors

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In this study we propose a new analysis framework, called Structural Similarity Analysis (SSA), based on the network characteristics of sectors. In this framework, we first define new indicators of emissions generated through the supply chain network, called attribution indicators, that quantify how a specific sector contributes to the environmental emissions generated in the supply-chain network and evaluate the roles of sectors in supply chains comprehensively. The clustering analysis method based on the attribution indicators yields the structural similarity for a specific sector in the supply-chain complexity. From the results based on the world input-output database (WIOD), we found 9 clusters of Mining and Quarrying sectors and 12 clusters of Agriculture, Hunting, Forestry and Fishing sectors with similar structures. We conclude that in order to reduce emissions caused by a carbon-intensive industry, the country of that industry should refer to the policies of countries that have the same industry with similar characteristics.