# The analysis of Carbon dioxide emission structure based on the similarities of economic structure using IO analysis and clustering analysis

Topic: Regional input-output modeling I (Chair: Everlam Montibeler, The Federal Rural University of Rio de Janeiro)
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The international framework for mitigating climate change is moving away from relying on the level of economic development that distinguishes developed and developing countries. For example, the Paris Agreement has launched a climate change mitigation framework in which all countries, independently of developed and developing countries, set their own reduction targets. To achieve the long-term goal of the Paris Agreement, â€œHolding the increase in the global average temperature to well below2 degree above pre-industrial levelsâ€• (UNFCCC, 2016), each country is required to submit the goals, regularly report on the status of their country's efforts, and undergo a review. When review undergoing, it is very important to consider difference of economic structures because the way of the growth of countries is greatly diversifying due to the development of production technology, transportation and communication technology. In this study, we propose a new framework based on the similarity of economic structures. The similarity of the economic structure is estimated from the domestic production structure and consumption structure of the target countries obtained from the World Input-Output Database. The similarity is evaluated as the distance between the matrix of the two countries. Next, the target countries are grouped into several groups by applying a clustering analysis to the similarities. We then discuss how the role of structural similarity played in emitting greenhouse gases around the world. This study proposes a new approach to the existing framework for climate change mitigation and provides important information that can contribute to global sustainable development in the future.