

## **Assessing the Energy, CO<sub>2</sub> and Value Added Flows Embodied in the International Trade of BRICS - Based on a MRIO Model**

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The BRICS (Brazil, Russia, India, China and the South Africa) has been becoming an important contributor to the growth of world economy. Concerns of carbon emissions from the BRICS increasingly rises with its expanding energy use recently. Although the embodied energy use related emissions of the BRICS were greatly discussed in the literature, the integrated analysis on energy, carbon footprint and value added flows associated with the international trade for the BRICS has rarely studied to date. Based on an improved Multi-Regional Input-Output model, we analyzed the above-mentioned three flows embodied in the trades within the BRICS and between the BRICS and other economies. The main novelties of this research as follows. First, a new WIOD database was constructed by extracting South Africa out of the RoW following the consistent sector classification of the WIOD. Second, an improved extended MRIO model was developed to estimate embodied flows in trades of both intermediate use and the final demand. Last but not the least, results of this analysis are expected to fill the literature gap for a comprehensive understanding of embodied energy, CO<sub>2</sub> and value added flows in the international trade of BRICS. The findings are valuable to policy formation on low carbon development for other emerging economies emulating such mode of growth under industrialization around the world.