

## **Cross-border effects of climate change mitigation policies under different trade regimes**

Topic: DP4 Discussants: Kirsten Wiebe, Shigemi Kagawa

Author: Kirsten S. WIEBE

Co-Authors: Johannes TÄBBEN, Moana SIMAS

In an increasingly globalized world, production chains are ever more fractioned across country borders, increasing the need to trace impacts of structural changes not only within the domestic economy, but also in other parts of the world. Decarbonizing the energy sector in one country can imply an increase in emissions in other countries due to increased production activities of certain technologies, or can create job losses in fossil fuel exporting countries. We implement the technological changes required for a 6-degree (increased mitigation action in the EU and Asia) and 2-degree (global climate mitigation action) warming scenario in a global multi-regional input-output system up to 2030. In light of SDG 13 "climate action", SDG 12 "responsible consumption and production", and SDG 8 "decent work and economic growth", we then analyze the indirect impacts on emissions, material extraction and employment through global value chains under four different trade scenarios based on the OECD "Scenarios for the World Economy". These scenarios are a baseline scenario, i.e. a continuation of current trends, an increased catch-up of the BRIICS countries, accelerated growth in the OECD countries, and decreasing trade openness. The corresponding trade structures at the product level are estimated using a gravity model. Preliminary results show that a global climate mitigation action scenario such as the 2-degree scenario, distributes positive effects on employment better around the world in an increased catch-up scenario, than in the other scenarios. The decreasing trade openness scenario puts most restrictions on the possibilities of climate mitigation action due to restricted access to raw materials.