The impact of decarbonization on trade patterns

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In this paper, we analyse the impact of decarbonization on market access, global trade patterns and investigates new opportunities it brings about.

We start by building a long-run baseline until 2050 of the global economy. This entails adding environmental features to the standard WTO Global Trade Model. We account for changes in the electricity mix (electrification and share of renewables in electricity), productivity growth of renewables, and changes in energy efficiency, based on current legislation and literature.

Second, we build a decarbonization scenario under which greenhouse gas emissions reach zero. This scenario includes further electrification, a shift to the use of renewables (solar and wind), and the use of hydrogen in sectors which are hard to decarbonize using electricity, such as maritime transport and aviation.

We analyse the impact of a net zero scenario on exports, trade prices, production, revealed comparative advantage, and global value chain organization. We analyse for example:

- How the content of exports changes, identifying winners and losers of a net zero scenario.
- Whether energy producers and countries specialized in emission-intensive and trade exposed (EITEs) sectors can shift their specialization patterns to more sophisticated sectors.
- How comparative advantage in the production of renewable energy, including indirect exports of renewable energy through hydrogen and electricity changes.
- How comparative advantage in the production of EITEs changes.
- Whether emission-intensive sectors suffer from disruptions in global value chains.
- How prices of both renewables and EITE products changes.

Furthermore, we model different policies that may be adopted to reach net zero, such as carbon pricing, regulations, and subsidies. We analyse the impacts of these policies on global trade patterns and GDP. This work allows for comparison across instruments and policy recommendation. Moreover, we discuss new trade policy questions that emerge as a result and opportunities for exports in green sectors, such as green transport and water services.