Azerbaijan: Pathways for Decarbonization in a Global Context

Topic: Input-Output Analysis
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As economies around the world are increasing their mitigation ambitions, Azerbaijanâ€™s lingering dependency on fossil fuel exports threatens its medium- and long-term economic development prospects. Global decarbonization is expected to directly impact the countryâ€™s resource rents through lower fossil fuel demand and prices. With an increasing level of mitigation efforts both domestically and worldwide, it is important to understand what could be the implications of these actions on the economy of Azerbaijan, including producers, consumers and government, and what proactive policy solutions can a country implement to reduce emissions, increase competitiveness and boost the economy.

To answer these questions, we apply a comprehensive modeling framework that relies on a global computable general equilibrium (CGE) model coupled to a Global Trade Analysis Project (GTAP) multi-region input-output (MRIO) database. This framework is used to assess a set of exploratory scenarios that represent alternative futures under varying assumptions in terms of mitigation efforts. The set of policies and measures includes fossil-fuel subsidy reform, carbon pricing, and alternative revenue recycling options. The framework allows us to assess the implications of the policy options on a wide range of indicators, taking into account mitigation co-benefits, thus contributing to the ongoing discussion of future climate policy solutions for Azerbaijan.

Several important policy insights follow from our analysis. First, while being exposed to the declining global fossil fuel demand and prices that are expected to accompany decarbonization efforts in countries around the world, it is in Azerbaijanâ€™s self-interest to implement domestic mitigation policies. The latter would allow the country to benefit from the first-mover advantages by exporting fossil fuels at a relatively high price to the rest of the world. Our findings align with policy suggestions outlined in Vidadili et al. (2017), implying that the development of renewable energy in Azerbaijan could sustain fossil fuel exports. While Mukhtarov et al. (2020) find that high oil prices could be an obstacle to Azerbaijanâ€™s decarbonization efforts, our results suggest that they could also present an opportunity if the country moves fast on the decarbonization path.
Second, electricity and natural gas tariffs are currently well below their economic costs, due to the presence of implicit subsidies. Considering the current energy sector revenues windfall, the country is well-positioned to proceed with the subsidiesâ€™ phase-out, as international experience shows that successful pricing reforms are often implemented when fiscal pressures are low (World Bank, 2023d). A gradual but steady phaseout of fossil-fuel subsidies by 2030, followed by the introduction of economywide carbon pricing of at least US$25 per tCO2 by 2035 with the collected revenue being used to reduce factor taxes in Azerbaijan, is the economically most efficient path to incentivize clean energy transition and improve energy efficiency. From the policy perspective, such a transition entails a gradual deregulation of natural gas, electricity, and fuel prices, as well as a strengthening of regulators and market mechanisms in price setting â€“ areas, where Azerbaijan has achieved limited progress in recent years (Cholewa et al., 2021; Guliyev, 2024).
Third, our results suggest that it is important to take into account broader environmental impacts and co-benefits from decarbonization efforts, such as reductions in air pollutant emissions, which further lead to improved air quality and declining mortality. When properly accounted for, such co-benefits could substantially reduce the overall cost of mitigation and even result in net welfare gains in Azerbaijan.