

The cost of failing to prevent gas supply interruption: a CGE assessment for Peru

Topic: CGE and SAM Applications

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Since 2000, there has been a significant progress in social and economic indicators of Peru. This improvement was fostered by favorable terms of trade and sound economic policies, including a market-friendly orientation and exports promotion. Even though the country risk has diminished dramatically, several threats remain. One the key ones is the possibility of involuntary interruption (transitory or permanent) of service of the transport grid of the oil and gas industry. They are very important for the share of oil and gas in total exports of the country and because they are a basic input for domestic manufactures, and for household consumption.

Given the significant discoveries of natural gas deposits in Peru and relevance that it has taken for energy matrix and the national economy, it is relevant to analyze the impact that a transportation constraint of gas could have for the domestic users as well as for exports. Earthquakes, unexpected social unrest or intentional actions could interrupt the service of some of the fundamental ducts of the grid. Some statistics illustrate that possibility: between 2004 and 2014 the regions were those ducts run experienced 40 seismic movements, of which 14 had a register higher than 6.5 in Richter scale and resulted in more than 700 casualties.

Since 2004, primary liquid and dry gas has been supplied by Camisea to internal use and for exports. Camisea represents a 92% of total gas production in 2010 and 94% of the total gas reserves. Three big ducts connect the upstream to the distribution centers. To have a quantitative appraisal of the cost of disruption we built a CGE model which contains 26 sectors, two households (Rich and Poor), a government and the rest of the world. The energy supply is represented in the model by eleven sectors: extractive activities (oil, NGL and natural gas), refining (oil and NGL), biofuels (diesel and ethanol), Electricity generation and transmission and distribution (Electricity and gas). The model was developed under request and collaboration of OSINERGMIN (the Peruvian regulator of energy). To take into account the economy wide impact of the interruption of gas supply it is necessary to construct a model that gives the economic value of the infrastructure considering modifications of relative prices, markets reactions and income effects. This assessment can be used also to evaluate projects of protection and adaptation of the infrastructure. We simulate different scenarios considering the three most important ducts from Camisea. The results show that those shocks would represent an important decline of GDP (about 68% in annual terms or 0.2% by day) and a significant reduction of welfare for households. The estimated daily cost is in the range of 270 millions of US dollars for the worst scenario.