

The Paris Agreement and its effect on labor markets in Latin America and the Caribbean

Topic: Thematic IO analysis: Sustainable Development Goals / Developing countries

Author: Kirsten S. WIEBE

Co-Authors: Johannes TÄ–BBEN

The implementation of the Paris agreement will bring about significant structural changes in the global economy. Global multi-regional input-output (MRIO) databases paint a detailed picture of the current economic structure and trade dependencies between industries within and across countries [1]. Using these data as a base allows for a detailed modelling of the effects of the structural change that is necessary to reach the “less than 1.5 degrees warming” target. While the energy sector has to undergo the largest changes globally, for Latin-American and Caribbean (LAC) countries, the agriculture and forestry industries play an equally important role, both in the economy as well as for socio-economic and environmental consequences of the structural change.

The objective of this analysis is to quantify on a country-by-country basis the potential impacts of decarbonization strategies on labor in the LAC countries in the medium term (2030 and 2050). We use a simple input-output approach, based on data from GTAP9, with a modelling of technological change in the energy and the agricultural industries. We develop a set of simulations following the XLRM framework [2]: uncertainties (X), levers (L), relationships (R) and metrics (M). Uncertainty (X) relates to different possible future developments of exogenous factors, such as population, GDP per capita, total food intake per capita, and energy services (electricity, transportation) needs per capita, and changes in demand outside the region. These uncertainties are applied to the different levers (L), i.e. the different possible technological developments. The resulting simulations with the MRIO table, which relates (R) the uncertainties to the levers, are analyzed with respect to three groups of metrics (M): direct and indirect employment, energy and food production, and emissions. These multiple combinations of the different uncertainties and levers allow us to estimate a bandwidth of possible outcomes for the effects of the Paris agreement on the different metrics in the LAC countries, thus quantifying possible uncertainties in the results of a simple IO simulation exercise. (We do not have any results yet.)

In addition to the analysis of the bandwidth of possible outcomes for the labor market in the LAC countries, we aim to develop a set of Python functions, that allow other IO researchers to easily implement the XLRM simulation analysis for different combinations of uncertainties and levers.

[1] Baldwin R, Lopez-Gonzalez J (2015) Supply-chain Trade: A Portrait of Global Patterns and Several Testable Hypotheses. *World Econ* 38:1682–1721 . doi: 10.1111/twec.12189

[2] Kalra, N., Gill, S., Hallegatte, S., Brown, C., Fozzard, A., Lempert, R., Shah, A., 2014. Agreeing on robust decisions – new processes for decision making under deep uncertainty (No. WPS6906). The World Bank.