

## IFPRI Report on GTAP 2022-23

Several applications of the GTAP database and the MIRAGRODEP model in the period focused on repurposing agricultural support to better achieve multiple goals. In this situation, policy analysis requires assessment of the impacts of each instrument on each goal and some mechanism to determine the best combination of policies.

One major study, with the World Bank (Gautam et al 2022) considered the impacts of reforms to agricultural trade measures, subsidies, emission reductions through policy conditionality and support for innovations that both raise productivity and reduce emission intensities. The impacts considered included economic efficiency, GHG emissions, land conversion and poverty impacts. Curiously, reducing subsidies had a larger impact on emissions than reductions in support provided by market access barriers. The study built a strong case for repurposing support to green innovations that both reduce emission intensities and raise productivity. Related work by FAO et al (2022) contributed to key policy documents throughout the UN system. Key results were disseminated to the G20 through its T20 policy briefs.

An important contribution to trade policy analysis in the past year focused on implementation of the African Continental Free Trade Agreement (Bouët et al 2022). Three important documentation reports on versions of the MIRAGRODEP model were completed during the review period (Bouët et al 2022; Bouët, Laborde and Traoré 2022b,c).

IFPRI's Foresight team couples IFPRI's global, partial equilibrium, multimarket, agricultural sector model (the IMPACT model) with a global, general equilibrium model (GLOBE, based on GTAP data) in an iterative procedure to capture the feedback effects between modeled agricultural sector shocks and the broader economy. Some recent outputs using coupled IMPACT-GLOBE modeling frameworks:

Mason-D'Croz, D; JR Bogard; M Herrero; S Robinson; TB Sulser; KD Wiebe; D Willenbockel; HCJ Godfray. 2020. Modelling the global economic consequences of a major African swine fever outbreak in China. *Nature Food* 1: 221–228. <https://doi.org/10.1038/s43016-020-0057-2>

Rosegrant, MW; TB Sulser; S Dunston; N Cenacchi; KD Wiebe; D Willenbockel. 2021. Estimating the global investment gap in research and innovation for sustainable agriculture intensification in the Global South. Commission on Sustainable Agriculture Intensification (CoSAI), Colombo, Sri Lanka. <https://hdl.handle.net/10568/114761>

Sulser, TB; KD Wiebe; S Dunston; N Cenacchi; A Nin-Pratt; D Mason-D'Croz; RD Robertson; D Willenbockel; MW Rosegrant. 2021. Climate change and hunger: Estimating costs of adaptation in the agrifood system. Food Policy Report. International Food Policy Research Institute, Washington, DC. <https://doi.org/10.2499/9780896294165>

Documentation of the IMPACT-GLOBE link:

Delzeit, R; R Beach; R Bibas; W Britz; J Chateau; F Freund; J Lefevre; F Schuenemann; TB Sulser; H Valin; B van Ruijven; M Weitzel; D Willenbockel; K Wojtowicz. 2020. Linking global

CGE models with sectoral models to generate baseline scenarios: approaches, challenges, and opportunities. *Journal of Global Economic Analysis* 5: 162-195.  
<https://doi.org/10.21642/JGEA.050105AF>

Willenbockel, D; S Robinson; D Mason-D'Croz; MW Rosegrant; TB Sulser; S Dunston; N Cenacchi. 2018. Dynamic computable general equilibrium simulations in support of quantitative foresight modeling to inform the CGIAR research portfolio: Linking the IMPACT and GLOBE models. IFPRI Discussion Paper 1738. International Food Policy Research Institute, Washington, DC. <https://ebrary.ifpri.org/digital/collection/p15738coll2/id/132757>

## References

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- Bouët, A., D. Laborde and F. Traoré, (2022b) MIRAGRODEP-AEZ 1.0: Documentation, AGRODEP Technical Note 0024, IFPRI.
- Bouët, A., D. Laborde and F. Traoré. (2022c), MIRAGRODEP with Endogenous Tariffs 1.0: Documentation, AGRODEP Technical Note 0027, IFPRI.
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- Gautam, M., Laborde, D., Mamun, A., Martin, W., Piñeiro, V. and Vos, R. 2022. *Repurposing Agricultural Policies and Support: Options to Transform Agriculture and Food Systems to Better Serve the Health of People, Economies, and the Planet* © The World Bank and IFPRI.
- Glauber, Joseph & Laborde, David, 2023. "Repurposing food and agricultural policies to deliver affordable healthy diets, sustainably and inclusively: what is at stake?," ESA Working Papers, Economics Division (ESA).
- Martin, W., Vos, R., Glauber, J., Laborde, D., Piñeiro, V., Gautam, M., Resnick, D., Sanchez, M., Ding, H., Rosdaniah, S., Alta, A., Fauzi, A., Setiawan, I., Piñeiro, M., Argentina Pablo Elverdi, C., Illescas, N., Tejeda Rodriguez, A., Ruggeri, C. (2022), G20 Framework for Repurposing Agricultural Policy Support to Meet Global Climate Change and Food Security Goals, T20 Brief. [https://www.t20indonesia.org/wp-content/uploads/2022/11/TF4\\_G20-framework-for-repurposing-ag-and-food-policy-support.pdf](https://www.t20indonesia.org/wp-content/uploads/2022/11/TF4_G20-framework-for-repurposing-ag-and-food-policy-support.pdf)