# Assessing the Socio-Economic and Environmental Impacts of the EU Deforestation Regulation on Argentina: A Hybrid Environmental Input-Output Analysis

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Recent environmental trade regulations are reshaping the conditions under which global agricultural value chains operate. Among them, the European Union Deforestation Regulation (EUDR) introduces strict traceability and sustainability requirements for commodities associated with deforestation, including soy and beef. These measures may significantly affect exporting countries whose production structures are closely linked to land use and agricultural expansion. Argentina, as a major exporter of soybean and cattle-beef products, represents a particularly relevant case for evaluating the socio-economic and environmental implications of such regulatory changes.

The research question addressed in this paper is: What are the potential economic, social, and environmental impacts of the EU Deforestation Regulation on Argentinaâ€™s soybean and cattle-beef value chains and on the broader Argentine economy? More specifically, the paper investigates how alternative compliance scenarios may affect production, employment, greenhouse gas emissions, land use, and deforestation associated with exports to the European Union.

To answer this question, the paper develops a Hybrid Environmental-Economic Input-Output (HEEIO) model calibrated for Argentina. The methodological framework combines traditional input-output analysis with environmental and social satellite accounts in order to capture the interdependencies between production activities and natural resources. This approach allows the evaluation of both direct and indirect effects of changes in export demand across sectors and regions. The model is used to simulate counterfactual scenarios representing possible responses to the EUDR. Two main scenarios are considered. The first corresponds to a pessimistic scenario in which Argentina fails to comply with the regulation, leading to a disruption of soybean and cattle-beef exports to the EU. The second represents an optimistic scenario where Argentina successfully complies with EUDR requirements and potentially gains market share in the EU due to difficulties faced by competitors in meeting the same standards.

The database underlying the model is built around a Social Accounting Matrix (SAM) for Argentina with 2018 as the base year, complemented by several environmental and social satellite accounts. These include employment accounts derived from national labour statistics, greenhouse gas emissions accounts constructed using the SEEA framework and Argentinaâ€™s national emissions inventory, and land-use accounts based on agricultural and forestry statistics. Additional datasets include bilateral trade flows at the HS6 level from the WITS/COMTRADE database, provincial production and export statistics, and sectoral information on land use and deforestation. Together, these datasets allow the model to estimate economic multipliers and environmental footprints associated with exports, enabling an integrated assessment of policy scenarios.

The novelty of this research lies in its integrated analytical framework. First, while existing articles and reports on the EUDR mainly rely on trade indicators or computable general equilibrium models, this paper combines input-output analysis with environmental and social accounts to capture economy-wide intersectoral linkages and environmental footprints simultaneously. Second, the model explicitly incorporates employment, greenhouse gas emissions, land use, and deforestation indicators, allowing the identification of trade-offs between economic performance and environmental outcomes. Third, the analysis introduces a provincial dimension that highlights the

territorial heterogeneity of impacts across Argentinaâ€™s regions. By integrating economic, social, and environmental dimensions within a unified modelling framework, the paper provides a comprehensive assessment of how sustainability-oriented trade regulations may reshape agricultural value chains in commodity-exporting economies.

The results offer insights into the potential risks and opportunities associated with the EUDR for Argentina and contribute to the broader discussion on how environmental regulations may influence global value chains, trade patterns, and sustainable development strategies in resource-based economies. These findings may support policymakers in designing strategies that balance environmental commitments with economic competitiveness in international markets.