THE ENVIRONMENTAL EFFECTS OF EU-MERCOSUR FTA IN LULCC AND ENERGY RELATED GHG EMISSIONS

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ABSTRACT

The European Union (EU) and the Southern Common Market (MERCOSUR) reached an Association Agreement (AA) in June 2019 that aims to eliminate trade barriers and increase economic cooperation. While the deal has been greeted as a positive step for international trade, concerns have been raised about its potential environmental impacts, particularly with regards to GHG emissions from land use change (LUCL) and deforestation. This paper aims to explore the potential environmental impacts of the EU-MERCOSUR trade deal focusing on GHG emissions, by employing a two-step methodology. First the implementation Computable General Equilibrium (CGE) model, which uses the GTAP 10 LULC database to explore different trade policy scenarios. Second, GHG emissions are calculated using the GTAP's emission factors for CO2 and Non-CO2 emissions data bases, and CO2 emissions from LULC using GTAP EF model and matrices of land use change derived from the simulation results. The study finds that in the advanced scenario, which assumes a more extensive trade liberalization, global GHG emissions could rise by 0.31%. The increase is mainly due to the contribution of LUCL emissions, which account for 89.9% of the total increase. The study highlights the need for careful consideration of the potential environmental impacts of trade agreements, by comprehensively accounting LULC and energy emissions.

Keywords: Trade policy, climate change, GHG emissions, LULC emissions, leakage effect

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BACKGROUND

In recent months the European Union has signaled that a possible ratification of the EU-MERCOSUR Trade Agreement from some member countries of both blocs, as well as by the European Parliament could finally undergo by July of 2023.[3] Moreover the recent approach of China towards MERCOSUR has added new dimensions to the negotiations, raising concerns in the EU for the growing political and economic influence of the giant Asian economy in Latin America. China's increasing presence in the MERCOSUR region, particularly in terms of investments, trade, and infrastructure projects, has highlighted the strategic importance of the region. As a result, the EU has been more motivated to approve the free trade agreement at the European Parliament to safeguard its economic interests and maintain its influence in the region.

The EU and MERCOSUR are significant economic blocs with substantial GDP, population, and land extension. In 2021, the EU's GDP amounted to USD 17.165 billion, while MERCOSUR countries recorded a GDP of USD 2.094 billion. Trade between the two blocs is considerable, with the EU exporting goods worth EUR 45 billion and services valued at EUR 17 billion to MERCOSUR in 2021 and 2020, respectively. The EU also holds the position of being the largest foreign investor in MERCOSUR, with a stock value of EUR 330 billion in 2020. However, total trade with MERCOSUR represents only 1.9% of the EU's overall trade, with imports totaling EUR 33.14 billion in 2020. This long-term trend of trade between the two blocs has been sensitive to price fluctuations, particularly from the MERCOSUR side, leading to contraction from a peak of EUR 39.06 billion in 2018 to EUR 68.66 billion in 2020, mainly attributed to the COVID-19 pandemic.

In terms of sectoral composition, EU exports to MERCOSUR are dominated by high-value-added products, including pharmaceutical and medical equipment, vehicle parts, chemicals and petrochemicals, and electronics. Food and drink products account for only 4% of total exports to MERCOSUR. On the other hand, MERCOSUR exports to the EU primarily consist of primary products such as animal products, oil seeds, crude oil, and minerals. This breakdown of sectors is depicted in Figure 2 and Figure 3, respectively.

[3] EU warms to unlocking stalled Mercosur trade deal. In https://www.reuters.com/business/eu-warms-unlocking-stalled-mercosur-trade-deal-2023-03-10/

Figure 1. MERCOSUR trade in goods with main partners in percentage. Source: UNCTAD[4]

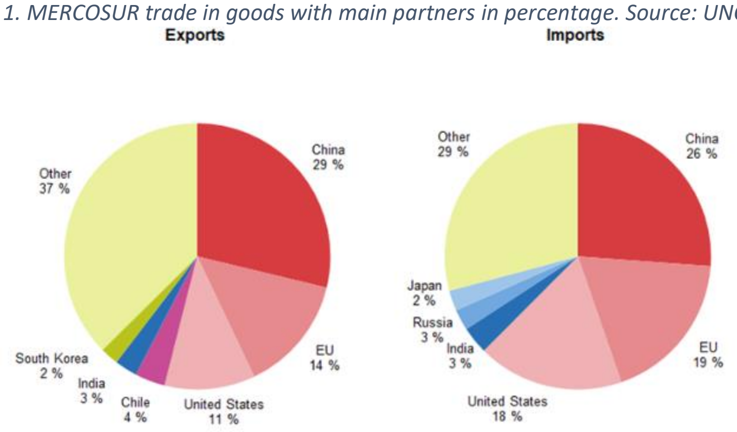
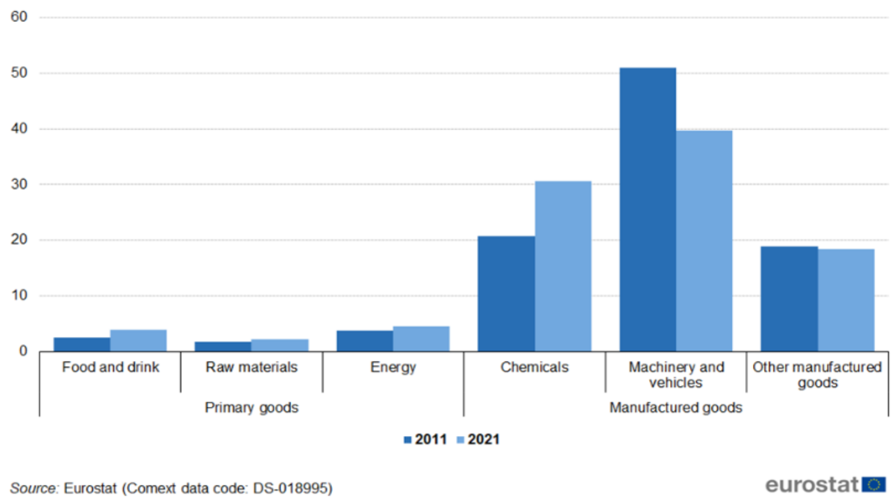
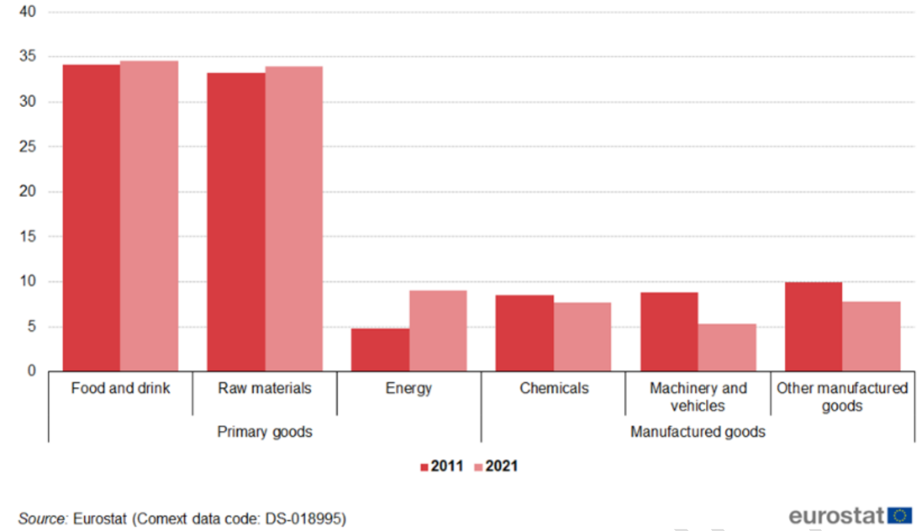


Figure 2. EU exports to MERCOSUR by product group, 2011 and 2021. (Share of total export value)



[4] Taken from (Eurostat explained, 2022)

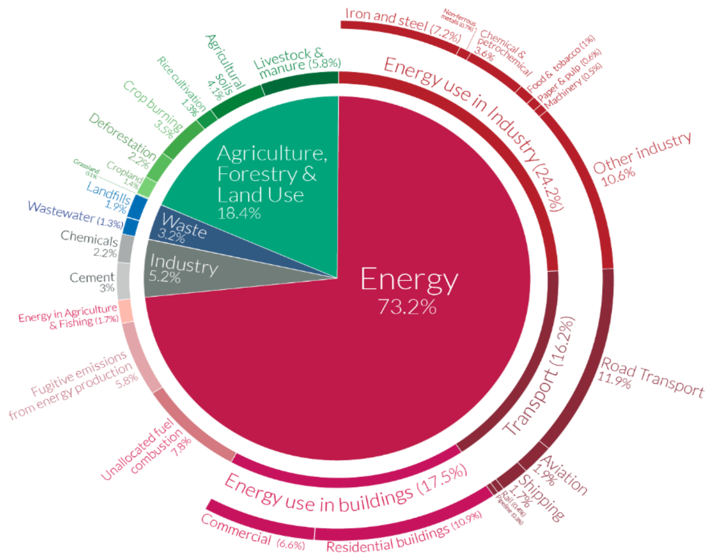
Figure 3. EU imports from MERCOSUR by product group, 2011 and 2021. (Share of total import value)



A crucial aspect is the one concerning the environmental effects of the MERCOSUR-EU AA and the potential implications of the agreement on deforestation in the Amazon basin. One possible consideration is the possibility of a significant expansion in land devoted to soy production, or the second most profitable use of land, beef production. (Dros, 2004).

Globally, energy emissions account for about 73.2% of all GHG emissions, the majority of which are CO2. LULCC accounted for the remaining 18.4%, a sector where non-CO2 emissions are also important. See Figure 4.

Figure 4. Global GHG emissions by sector. Source: Our world in data[5]



In terms of growth, average annual GHG emissions during 2010-2019 were higher than in any previous decade on record, while the rate of growth between in the same period (1.3% per year) was lower than the previous decade (2.1% per year).

Analyzing the environmental context, Latin America and the Caribbean (LAC) collectively accumulated approximately 1.652.331 kilotons (Kt) of CO2 emissions by 2019, accounting for approximately 5% of global greenhouse gas (GHG) emissions. Notably, the energy sector contributed around 46% of these emissions, which is lower than the global average of 71%. In contrast, the agriculture and Land-use Change (LULC) sectors represented 23% and 19% respectively, surpassing the average contributions of these sectors in the rest of the world.

Integrating a land module within the CGE model will allow the examination of indirect effects resulting from changes in land allocation due to the FTA between the two blocs. For instance, the expansion of certain agricultural activities may lead to land conversion from other products that would otherwise move into forested areas. Our choice of model requires explicit land module to comprehensively assess carbon dioxide (CO2) emissions resulting from LUC, while also incorporating fossil energy emissions. Such a model allows for a holistic evaluation of the environmental impact of different economic activities, including the conversion of land for various purposes such as agriculture, urbanization, and deforestation. By explicitly accounting for LUC

[5] Taken from (Ritchie, 2020). Data from Climate Watch

emissions, the model provides a more accurate representation of the total carbon footprint attributable to land-use changes.

LITERATURE REVIEW

METHODOLOGY

DATA

To conduct this research, we employed multiple sources of data and models to comprehensively analyze the interplay of various factors. Firstly, we utilized the GTAP 10 Land-Use and Land-Cover (LUC) Database, which provides detailed information on land-use patterns and changes across different regions. This database enabled us to incorporate the spatial dimension of land-use dynamics into our analysis, allowing for a more accurate assessment of the environmental implications associated with different scenarios.

In addition to the GTAP 10 LUC Database, we leveraged the GTAP EMIS (Emissions) database for energy emissions, the GTAP non-CO2 database to complement the picture of GHG emissions, and finally and the GTAP EF model. These databases facilitated the estimation and evaluation of GHG emissions resulting from different economic activities and trade patterns. By capturing emissions at a disaggregated sectoral level, we were able to assess the environmental impacts associated with specific sectors and identify key drivers of GHG emissions within the context of the research.

The calculation of CO2 emissions resulting from LUC involves analyzing specific land use transitions, such as the conversion from forest to pasture or cropland, and pasture to cropland. These transitions are sequenced in order of likelihood, and using the AEZ-EF model, the emissions or sequestration of CO2-equivalents can be estimated based on the conversion of land cover classes. This methodology based is Plevin, Gibbs, Duffy, S., and Yeh (2014).

In our analysis, economic sectors are organized into 44 distinct activities, with each activity mapped one-to-one to corresponding commodities in the model. This level of detail allows us to capture the specific deregulation mandates outlined in the FTA and understand its impact at the sectoral level. To examine the broader trade dynamics, we adopt a 12-region aggregation approach. This data framework encompasses four individual countries (Argentina, Brazil, Paraguay, and Uruguay), the European Union after Brexit, and eight regional aggregations selected based on their trade balance significance for both blocs. These regions include China, the USA, the rest of Latin America and the Caribbean, other high-income countries, other developing economies, least developed countries, and the rest of the world. By employing this comprehensive framework, we can effectively assess the sector-specific changes and trade patterns influenced by the FTA.

MODEL

The research conducted in this study utilized the GAMS implementation of the GTAP (Global Trade Analysis Project) model, version 7.1, as developed by van der Mensbrugghe (2018). The model incorporates an aggregate factor supply function and utilizes a Constant Elasticity of Transformation (CET) specification for the allocation of domestic outputs in destination regions. Additionally, the model includes the GTAP-LU extension, which allows for the incorporation of the GTAP 10 Land-Use and Land-Cover (LULC) Database. This extension introduces an additional level to the production nest for all 18 land Agro-Ecological Zones (AEZs), enabling the representation of a composite land factor of production.

By leveraging the capabilities of the GAMS implementation of the GTAP model, this research aims to provide valuable insights into the complex relationship between trade, economic activities, and land-use patterns. The model's ability to incorporate factors such as aggregate supply, CET allocation, and the GTAP-LU extension enables a more comprehensive understanding of the dynamics at play, facilitating informed decision-making and policy formulation within the context of the research.

SCENARIOS

Based on the outlined agreement in principle, it is anticipated that approximately 95%of tariff lines pertaining to EU exports to Mercosur economies would undergo elimination, thereby resulting in the removal of approximately $4.5 billion worth of import duties on EU products entering Mercosur annually. Concurrently, around 91 percent of tariff lines concerning Mercosur's exports to the EU would similarly be abolished, with the remaining 7% being subjected to preferential treatment. Additionally, this agreement aims to mitigate non-tariff barriers existing between the two blocs, encompassing standards and regulations that impede trade flows.

To capture the effects of tariff reductions, we align our modeling approach with the tariff line provisions outlined in the FTA documents. This involves mapping sectors from a Harmonized System (HS) six-digit level to their corresponding categories in our model aggregation. Furthermore, the modeling of NTMs follows the approach established by Jafari and Britz (2018). In this framework, rents generated from the elimination of NTMs are collected through ad-valorem taxes imposed by the government in the importing and/or exporting countries. These taxes not only generate revenue for the respective governments but also influence demand prices in the importing country.

Table 1. Scenarios description

Scenario Region	MERCOSUR	EU
Reduced	Tariffs: cuts 80% of industrial tariffs, 60% of agricultural, 30% Processed foods	Tariffs: EU27 cuts 90% on industrial tariffs and 10% on agricultural tariffs and 30% reductions of processed foods
	10% NTM reductions for all sectors by all parties	
Advanced	Tariffs: Mercosur cuts 100% of industrial tariffs and 100% on Agricultural, 50% Processed foods	Tariffs: EU27 cuts 100 on industrial tariffs and 20% on agricultural tariffs
	NTM are reduced by 20% AVE by both parties	

RESULTS

The impact of tariff reductions on the model is twofold: it alters the relative prices of imports in each region and influences the consumption pattern of Armington agents, encompassing both final demand and intermediate inputs. Additionally, these reductions have implications for import tax revenues in the case of regular trade barriers. Table 2 reveals that the average prices of imported goods from MERCOSUR countries decline by approximately 3% to 4% in the European Union (EU). Similarly, relative prices in other MERCOSUR member countries decrease among member countries, while exports to the rest of the world (ROW) experience a similar trend. On the other hand, prices of EU exports to MERCOSUR decrease by approximately 1% to 2%, with a marginal increase of about 0.1% observed in exports to ROW.

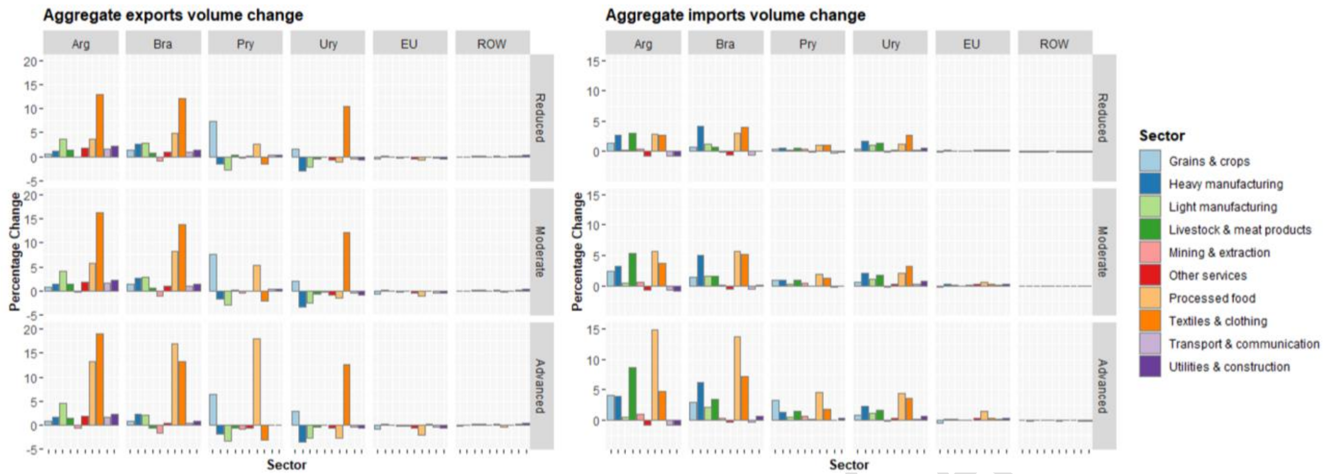
Table 2. Aggregate bilateral price of import change. Percentage %. Source: Author

		SOURCE				
		Argentina	Brazil	Paraguay	Uruguay	EU
DESTINATION	Argentina	-	(0.171)	(0.027)	(0.003)	(4.620)
	Brazil	(0.326)	-	(0.027)	(0.003)	(4.468)
	Paraguay	(0.324)	(0.171)	-	(0.005)	(3.283)
	Uruguay	(0.326)	(0.171)	(0.027)	-	(3.455)
	EU	(2.537)	(2.131)	(0.769)	(1.017)	-
	ROW	(0.330)	(0.173)	(0.029)	(0.004)	0.104

Figure 5 illustrates the variations in export volumes across different sectors for MERCOSUR countries. Notably, there are increases in aggregate exports of "Processed food," "Textiles & clothing," "Grains & crops," "Livestock & meat products," and "Light manufacturing." Among these, the sector experiencing consistent growth in all MERCOSUR countries is "Grains & crops." The increase in "Processed food" exports is particularly significant in scenarios that consider hypothetical reductions in non-tariff measures, primarily related to food safety standards. The sectors of "Light manufacturing" and "Heavy manufacturing" witness a slight increase in exports for Argentina and Brazil, while a decrease is observed for Paraguay and Uruguay.

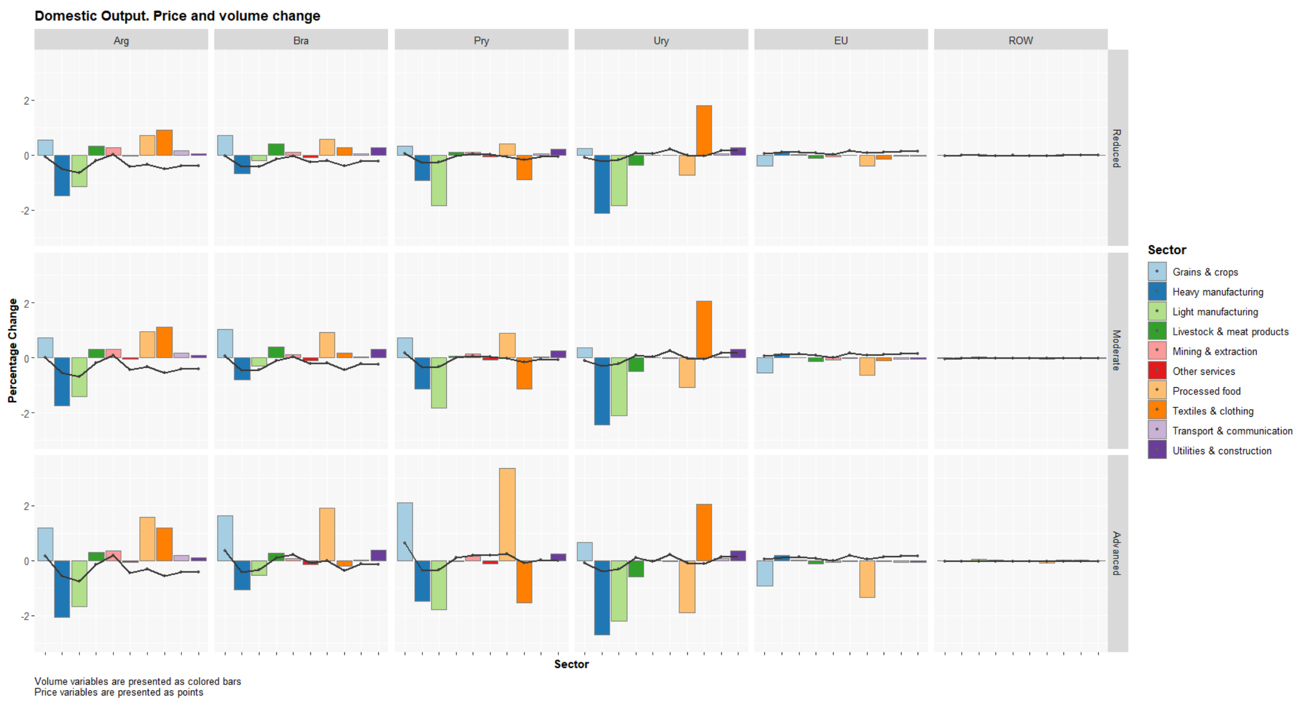
In terms of imports to MERCOSUR, lower prices have a positive impact, particularly in the categories of "Heavy manufacturing," "Light manufacturing," "Processed food," and "Textiles & clothing." Conversely, for the European Union (EU), both aggregate exports and imports undergo minor changes, even in the advanced scenario. Examining the EU's exporting sectors in detail, those performing well include chemicals, metallurgies, motor vehicles and transportation, electronics, and machinery and manufacture.

Figure 4. Aggregate exports and imports volume change. Source: Author



The scale of sectoral output provides insights into regional changes. For example, in the advanced scenario, exports of "paddy rice" from Brazil to the EU witness a significant increase of over 105%. However, the overall output in that sector experiences a decline of about 6%. Figure 6 presents the percentage changes in output volume and prices for selected regions across ten aggregated sectors. The overall range of change remains moderate, with "Heavy manufacturing," "Light manufacturing," and "Processed food" volume decreasing by up to 2% in certain MERCOSUR countries within the advanced scenario. Conversely, the sector of "Grains & crops" exhibits an increase in all MERCOSUR countries across all scenarios, while experiencing a decrease in output within the EU. Furthermore, "Livestock & meat products" display lower domestic prices, with increased output observed in Argentina and Brazil, whereas reduced output in the EU suggests a shift towards import substitution.

Figure 5. Domestic Output. Price and volume change. Source: Author



The model incorporates a two-level nested CES structure to determine factor demand. The upper level has only one nest that merges a composite of mobile factors (capital and labor) and natural resources, with land composite factor in each sector. The ease of substitution between these factors is determined by the elasticity parameter σ^{v}. The lower level has two nests, one that combines all different land types into a land composite factor, according to elasticity of substitution σ^{lnd} and another which combines (capital and labor) and natural resources using σ^{nlnd}.

Our model incorporates land as a factor with a positive supply elasticity. This assumption leads to the creation of upward-sloping supply curves for land, reflecting its imperfect price response.

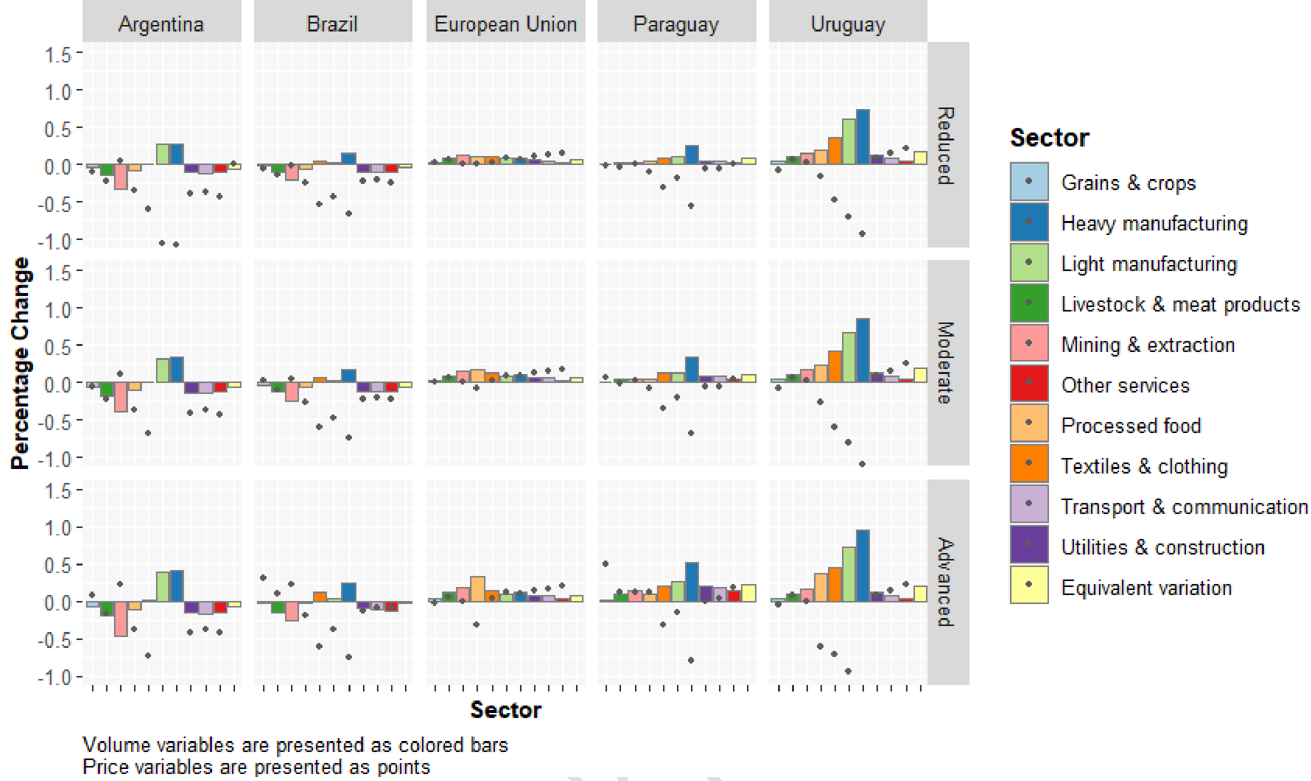
Table 3 presents the average factor demand across all sectors and regions, revealing that, as expected, perfectly elastic factors demonstrate larger responses compared to land factors. Examining by regions, factor demand increases in Brazil and Argentina, and reduces in Uruguay and the EU in all scenarios. Paraguay shows an increasing trend as well, but passes from a small contraction in the reduced scenario, to a small expansion in factor demand in the advances scenario.

Table 3 . Total factor demand level changes by region. Source: Author

		REGION					
		Argentina	Brazil	EU	Paraguay	ROW	Uruguay
		REDUCED					
FACTOR	Capital	0.093	0.150	(0.114)	(0.276)	0.001	(0.291)
	Land	0.160	0.025	(0.073)	0.163	0.001	(0.049)
	Natural Resources	-	-	-	-	-	-
	Skilled labor	0.085	0.245	(0.120)	(0.183)	0.000	(0.205)
	Unskilled labor	0.036	0.103	(0.126)	(0.274)	0.005	(0.342)
		MODERATE					
	Capital	0.124	0.186	(0.151)	(0.221)	0.001	(0.349)
	Land	0.182	(0.031)	(0.098)	0.280	0.002	(0.066)
	Natural Resources	-	-	-	-	-	-
	Skilled labor	0.115	0.310	(0.158)	(0.116)	0.000	(0.249)
	Unskilled labor	0.053	0.132	(0.164)	(0.236)	0.005	(0.414)
		ADVANCED					
	Capital	0.207	0.245	(0.246)	0.113	(0.000)	(0.430)
	Land	0.230	(0.133)	(0.177)	0.619	0.003	(0.086)
	Natural Resources	-	-	-	-	-	-
	Skilled labor	0.193	0.414	(0.255)	0.195	(0.001)	(0.317)
	Unskilled labor	0.117	0.181	(0.262)	0.032	0.005	(0.517)

Let's begin by examining private consumption of commodities. Figure 7 illustrates that overall changes in aggregate consumption across countries are minimal, with most cases showing small positive changes around 0.5%. There is a consistent downward trend in prices for the sectors encompassing "Heavy manufacturing," "Light manufacturing," and "Textiles & clothing" in most MERCOSUR countries which stimulates increased demand for goods. For the EU, positive values for consumption changes are smaller, and focused on “Processed food” and “Mining and extraction”. We include values for equivalent variation on each scenario, and we can see there that although Brazil and Argentina show small decrease, total equivalent variation for all regions changed in a range of 0.013% in reduced scenario to 0.0247% in the advanced one.

Figure 6. Private consumption and equivalent variation change. Percentage %. Source: Author



ENVIRONMENTAL IMPACTS

In this section we delve into the analysis of GHG emissions and their underlying economic drivers. We will start by examining the sources of CO2 emissions from energy consumption. Our results show an overall stability across all three scenarios, with a negligible increase of less than 0.003% in the advanced scenario. The transportation and industrial sectors emerge as the primary drivers of these slight increments. In MERCOSUR countries, the aggregated sectors of "Grains & crops" exhibit increased energy consumption, while in the European Union (EU), both "Light manufacturing" and "Heavy manufacturing" contribute to higher energy consumption. Notably, the heavy industries' heightened activity leads to CO2 emission increases ranging from 0.44% in the reduced scenario to 0.72% in the advanced scenario. Furthermore, the "Transportation & communications" sector drives an approximate 2% rise in CO2 emissions in the rest of the world, while experiencing a decrease of around 1% in the EU.

Next, we explore the changes non-CO2 emissions. By examining their relation to activity levels in our 10 aggregated sectors, we can gain a better understanding of how these changes are related to different channels. In Table 4 we can see how sectors contribute to aggregate non-CO2 emissions changes. "Grain & crops" activities exert a significant impact, followed by "Other services" and "Heavy manufacturing." Considering all 44 disaggregated sectors, we observe a general increase in total non-CO2 emissions across all regions. The magnitude of this increase varies from 0.028% in the reduced scenario to 0.045% in the advanced scenario. [6]

Methane emissions at a global level are primarily influenced by cattle ranching activities, particularly the increase in capital factor demand (number of cattle heads) in Brazil and Argentina. These changes are offset by small decreases in the "raw milk" activities. Similarly, nitrous oxide emissions show significant increases within the "oils seeds" and "other crops" sectors in MERCOSUR countries, ranging from 0.34% and 1.34% in the reduced scenario to 0.47% and 2.65% in the advanced scenario,. These findings align with the observed growth in output from these sectors.

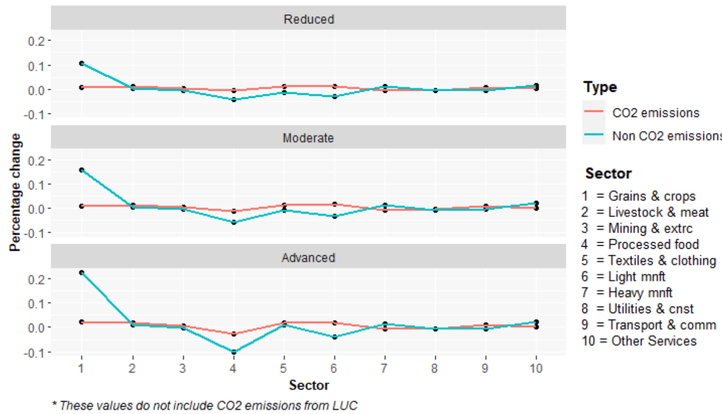
Table 4. Non-CO2 gases change by aggregated sector. Percentage %. Source: Author

		SCENARIO		
		Reduced	Moderate	Advanced
SECTOR	Grains & crops	0.1081	0.1552	0.2257
	Livestock & meat prod	0.0028	0.0055	0.0111
	Mining & extraction	(0.0028)	(0.0029)	(0.0031)
	Processed food	(0.0399)	(0.0585)	(0.1006)
	Textiles & clothing	(0.0143)	(0.0077)	0.0088
	Light manufacturing	(0.0284)	(0.0330)	(0.0384)
	Heavy manufacturing	0.0106	0.0124	0.0141
	Utilities & construction	(0.0050)	(0.0061)	(0.0078)
	Transport & communic	(0.0047)	(0.0051)	(0.0048)
	Other services	0.0166	0.0198	0.0224

Figure 8 provides a visual representation changes in CO2 and non-CO2 emissions at the aggregated sector level. We can see that changes relative to the global share are small for both categories, as the expected changes in production patterns do not alter significantly.

[6] Percentage change is calculated using a weighted average of the share of each of the 44 individual sectors in the model, by each non-CO2 gas, *not* the arithmetic mean of the 10 aggregated sectors.

Figure 7. Global CO2 and non-CO2 emissions change. Percentage %. Source: Author*



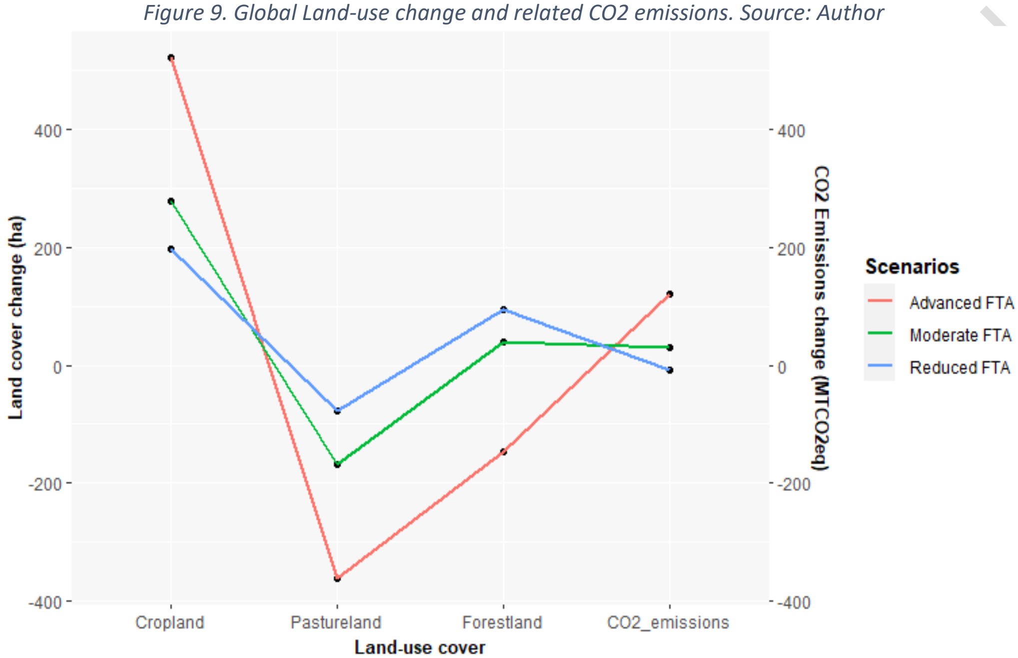
Finally, we will focus on CO_2 emissions associated with LUC. We will begin by reviewing LUC transitions by land types. In Table XX we can see an increase in land devoted to crop activities, following an increase in demand in MERCOSUR countries. These increases can be as high as 522,185.00 ha in the advance scenario. In most cases land is assumed to change from other activities that have lower returns, and so we see a decrease in Pastureland in all three scenarios, 362,007.16 ha in the advanced scenario. Finally, land devoted to forestry activities also follow a decline 196,912.93ha in the same scenario. Although we have allowed some endogeneity of land supply, most land demand increases comes from already active lands, or accessible lands. Hence, reduction in forestland cannot be assumed directly as deforestation.

Figure 8. Global land transitions by AEZ type in ha. Source: Author

	Scenario C			Scenario M			Scenario A		
Land Type	Cropland	Pastureland	Forestland	Cropland	Pastureland	Forestland	Cropland	Pastureland	Forestland
AEZ1	86.69	14,896.07	1.73	250.85	21,179.09	3.47	607.03	29,386.92	5.50
AEZ2	(880.37)	9,324.48	82.28	802.93	12,884.47	121.98	4,930.72	17,090.86	161.15
AEZ3	(2,793.50)	10,886.90	1,090.86	3,218.12	8,539.81	1,850.04	20,758.64	(8,293.17)	3,036.98
AEZ4	7,861.50	(10,443.57)	4,971.86	17,162.79	(22,433.27)	5,559.98	44,574.40	(46,042.43)	3,302.25
AEZ5	47,779.43	(36,249.19)	(2,003.47)	60,944.91	(24,972.65)	(21,457.21)	111,465.40	(58,088.46)	(74,743.41)
AEZ6	32,057.03	(25,339.86)	26,440.22	50,993.58	(48,102.50)	(33,512.88)	103,350.17	(55,390.03)	(214,151.98)
AEZ7	3,407.12	29,091.31	46.94	5,203.05	6,013.07	(75.34)	9,730.40	(15,843.92)	(547.89)
AEZ8	11,489.72	32,027.98	969.80	22,547.50	12,268.97	343.40	50,657.42	(54,180.27)	(2,116.92)
AEZ9	13,172.55	801.00	10,939.84	19,123.05	869.19	13,782.28	32,955.28	(6,907.94)	16,256.78
AEZ10	(11,920.95)	(15,287.13)	52,146.37	(16,740.34)	(8,241.11)	54,308.73	(16,921.75)	551.12	50,713.09
AEZ11	28,471.49	(18,574.51)	15,465.38	37,266.78	(26,634.50)	18,981.04	50,737.86	(40,095.91)	20,457.90
AEZ12	70,561.39	(72,827.15)	409.81	80,898.02	(104,216.01)	(5,304.06)	111,800.82	(126,139.02)	(16,394.44)
AEZ13	10.94	1,982.32	435.41	10.62	2,319.95	556.99	7.98	2,660.38	716.75
AEZ14	(40.21)	2,148.13	(596.18)	(36.65)	1,199.79	29.90	(6.18)	(1,251.20)	1,116.89
AEZ15	(2,312.12)	225.80	2,674.76	(2,552.64)	232.77	6,870.92	(2,489.84)	93.05	15,122.52
AEZ16	(52.02)	360.70	24.08	(36.25)	376.46	43.60	26.54	322.81	105.61
AEZ17	0.03	(2.34)	21.42	0.03	(2.01)	30.23	0.03	(0.84)	46.27
AEZ18	(0.00)	23.87	0.00	0.03	34.61	0.00	0.09	50.88	0.00
TOTAL	196,898.72	(76,955.17)	113,121.12	279,056.37	(168,683.87)	42,133.08	522,185.01	(362,077.16)	(196,912.93)

We also observe that distribution of more fertile soils, typically found in tropical and temperate regions with favorable humidity and chemical composition (AEZ5, AEZ6, AEZ10, and AEZ12), significantly influences the transitions in land use within our model. Specifically, land types AEZ5, AEZ6, AEZ 11 and AEZ12 primarily shift towards cropland uses, while AEZ10 predominantly transitions into forestland uses.

Figure 9. Global Land-use change and related CO2 emissions. Source: Author



The last step will be to account CO2 emissions from LUC along with other GHG sources. As can be seen in Table 4, net CO2 emissions in the red scenario are -0.028%, due to a decrease in land use from pasture uses, and an increase in forestry activities. These changes imply a carbon capture and creates a net reduction of -8.51 MT of CO2 when added to total energy related CO2 emissions. However, in the mdt scenario, net positive emissions from LUC contribute to an increment of 0.10 % of global CO2 emissions, and consequently an increment of total global GHG emissions of 0.084%. Finally, in the adv scenario we observe an increment of 0.406% global CO2 emissions, along with an increment of 0.046% of non-CO2 emissions.

Table 4. Global GHG emissions change with LUC CO2 emissions. Percentage %. Source: Author

		Non-CO2	CO2	GHG
SCENARIO	Reduced	0.028	(0.028)	(0.014)
	Moderate	0.037	0.100	0.084
	Advanced	0.046	0.406	0.314

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