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Reflections on the 21st century agrarian context

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Food riots arising from food crises in Latin America: Reflections on the 21st century agrarian context¹

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ABSTRACT

This paper focuses on food riots that arise in the agrarian context characterized by food crises, primarily for the rural poor in developing and undeveloped countries located in Latin America for the current century. It is a preliminary study that investigates the connection between food riots and some indicators and variables related to agrarian pressures and political strains, such as land grabbing, climate change, demographic pressures, and political polarization. The data analysis is descriptive in this initial phase of research. The Latin American region rarely features in investigations of the proposed theme, whereas Africa is widely studied, as is Asia, to a lesser extent. Latin America represents a paradox, because on the one hand it is one of the largest food producers in the world, but on the other hand, it has many citizens who do not have enough food for own consumption. The paper focuses on the violence emanating from food riots in order to understand the contexts in which it arises. Future studies may explain this phenomenon.

Keywords: Food riots; agrarian violence; land grabbing; climate change; demographic pressures; political polarization.

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I. Introduction

In this paper we will look to understand more about the food riots of this century that have had as a background the agrarian violence resulting from the food crises in Latin America. The most known food riots have occurred during 2007-8, 2011-2 and from 2020 onwards (also known as the COVID-19 pandemic)³. The main idea is to identify the link between the lack of food (or insufficient food) and the demand of the neediest population of the governmental authorities for emergency aid. In developing countries, governments often do not care for the most vulnerable layers of the population simply because they lack resources, sufficient organization, administrative capacity, political will, or are corrupt, or even a little of each. It is a paradox that Latin America, a region that is one of the largest producers and exporters of food in the world, has a huge contingent of people who are unable to eat properly.

The World Bank definition of food riots that we shall adopt within this paper is the following: "*a violent, collective unrest leading to a loss of control, bodily harm or damage to property, essentially motivated by a lack of food availability, accessibility or affordability, as reported by the international and local media, and which may include other underlying causes of discontent*" (NATALINI, JONES, and BRAVO 2015: 4363). This appears to be a more moderate definition of food riots in terms of which phenomenon to consider. While there are authors who only include violent collective events that end in death, and other authors see them as demonstrations that can be peaceful and without any violence, the above definition makes a bridge between these two extremes.

Some social science literature deals with the relationship between rising food prices and unrest on the part of vulnerable strata of society in poor or undeveloped countries (LEVIN-WALDMAN 2021). The African continent is usually mentioned, and sometimes the Asian continent as well (GARCIA-ARIAS *et al.* 2021: 10; RALEIGH, CHOI, and KNIVETON 2015; SMITH 2014). However, this literature still does not cover all of the important contributing or contextual factors, even in the descriptive way, especially in the Latin American region. Therefore, this paper considers possible relationships between food riots and relevant contextual or contributing factors, looking at each factor in a descriptive way. The intention is to better understand food riots, rather than to try to explain them (in the sense of claiming to

³ The latter, as it is still ongoing, and is very recent, still lacks consistent data.

have established a direct causal relationship between particular drivers of hunger and specific political outcomes).

The problem at hand is the *food insecurity* that exists when part of the population has no physical and/or economic access to sufficient food for an active and healthy life (FAO 1996). The difficulty is not just the availability of food, but the ability to purchase food by the poorest population when it does not have the support of public social programs, or, for the rural population, which generally has lower purchasing power than the urban and a higher poverty rate, even the incentive to produce adequate food at the level of family farming (BORRAS jr., and FRANCO 2012). In the less developed regions of Latin American countries the size of the rural population that works and gains their livelihood from the land is much larger than officially disclosed (THE ECONOMIST 2005; CHOMITZ, BUYS, and THOMAS 2005)⁴.

Although food riots are generally depicted as an urban phenomenon in the local and international media, these also occur in areas further away from urban centers. Therefore, in this study, there is an emphasis on their rural dimension, which is not marginal as it may seem (HUSSAIN *et al* 2017). Of the many protests and riots that occur frequently in Latin America, only some of them are characterized as food riots, given that often the issues that are raised are mixed with claims other than or in addition to food. In order to avoid analyzing riots in general, this research focuses on food riots and presents data specific to this type of situation. These can be violent and are not concentrated in large urban centers only.

Having the rural dimension of the food riots in mind, this paper suggest that the following factors may contribute, indirectly or even directly, to the occurrence of food riots in Latin America. These are identified briefly here and discussed at greater length in the sections that follow.

- 1) *Land Grabbing* by countries and/or groups of these countries where there is not enough land and/or land is infertile and, therefore, there is a need to seek land overseas, where the price is cheaper, and the land can produce and guarantee food, even in times of food

⁴ Outdated definitions of urban and rural areas are still used by most Latin American countries, not considering infrastructure, distance from centres with more than 100,000 inhabitants or population density are responsible for including much more urban than rural population, which is in contraposition of the World Bank and OECD definitions of urban and rural. All this means that, on average, the countries of the region register only 24% of the Latin American population as being rural, which should approach 42%, if such elements were incorporated in their definitions.

crisis, and exported to the investing country. Some investor countries produce inputs for renewable energy, such as sugar cane, soy, or corn and, in this way, occupying the land with products that will not directly serve to feed people or animals in the destination country of the investments. Therefore, in the host country, with less availability of land for food production (since a large part is in the hands of these countries and/or transnational conglomerates), the value of land will rise, in addition to food also having high prices (NEWMAN 2020: 302; PATEL, and McMICHAEL 2009: 22; BORRAS jr, McMICHAEL, and SCOONES 2010; BUSH, and MARTINIELLO 2017), making it difficult for the poorest, and pushing them into further marginality and food riots.

- 2) *Climate Change*. Although it is difficult to prove a direct causal link to food riots, climate change through greenhouse gas emissions can cause environmental problems such as droughts, and floods. These can immensely harm the production of food for human and animal consumption (WINSEMIUS *et al* 2018; LEBDIOUI 2022; FENG *et al* 2022). By affecting and reducing food production, climate change can raise food prices, making it difficult for the poorest population to acquire food in countries that do not have social assistance programs. This may increase the likelihood that those so affected may eventually participate in food riots. Much current research in social science no longer asks *whether* climate change is a risk for the emergence of conflicts, but rather asks *under what circumstances* climate change can become a risk factor for violent conflict (ECDPM 2019).
- 3) *Demographic Pressures*. The world population has increased by more than a third in the last three decades, going from 5.9 billion people in 1990 to almost 8 billion in 2022. This creates the need to adequately feeding all these people, the vast majority of them in emerging and developing countries (COOPER *et al* 2021; FUKASE, and MARTIN 2020). To compound the difficult task of feeding them properly, many people who have improved their lives changed their diets to animal protein, which has a negative impact on another part of the globe, causing more trees to be cut down to make room for livestock (cattle) for slaughter (RICARD, MAYER, and VIGLIZZO 2022). In other words, what happens on one side of the planet is felt on the other in different ways, and often precisely in countries where there are few resources to deal with problems of this nature. Such demographic pressures may contribute to conditions in which some people

participate in food riots as a way of demanding benefits that they do not currently receive from the public authorities. The youngest strata of the population, rather than the oldest, are likely to be most involved in such conflict situations.

- 4) *Political Polarization*. With a history of political, economic and social crises in Latin American countries, in several, populism has emerged as a way to gain electoral support and to play one population group against another (LUPU 2015), contributing to polarization of society and political elites. Leaders incite groups against others, raising conflicts in society (PALONEN 2009; MULLER-CREPON 2022), which increases the number of people who take to the streets to plead, not always peacefully, what they think of their rights as citizens, including joining food riots. A priori there is a pernicious ideological polarization that tries to delegitimize the other side, treating it as an enemy and not just as an electoral competitor, which greatly increases the animosity between the parties, promoted by political elites.

Inequality and type of political regime, along with the four above indicators, may contribute to the forces that combine to make food riots more likely (BUSH 2010; PRITCHARD 2014; PAKES 2014; VREELAND 2008). With large and growing socio-economic inequalities in society, and with governments that cannot or do not effectively mollify the dissatisfied, or allow peaceful demonstrations to occur without oppressing those who are in the streets,⁵ the forces that are conducive to food riots are present. Such situations may be a recipe for food riots to occur violently and to spin out of state control.

II. Food riots and factors that may contribute to them

i. Food riots

In the 2007/8 food crisis, food riots were present in about 30 countries, usually because of rising prices of basic foods (PATEL, and MCMICHAEL 2009), which made it difficult for the lower-income population to support their families. The 2011/2 food prices increase was also

⁵ Governments with such a profile are called by the quantitative literature of civil wars as *anocratic* regimes, that can be considered as intermediate or hybrid regimes, which partially present mixed characteristics of democracy and autocracy together. This is the type of regime that would be most predisposed to countries entering civil war. This is the type of regime that would be most predisposed to countries entering civil war. In parallel, we can borrow from this literature the hybrid type of political regime to complete the profile of countries that would have food riots. However, it should be investigated more deeply.

associated with social unrest and food riots across developing and emerging countries on different continents (BELLEMARE 2015: 18).

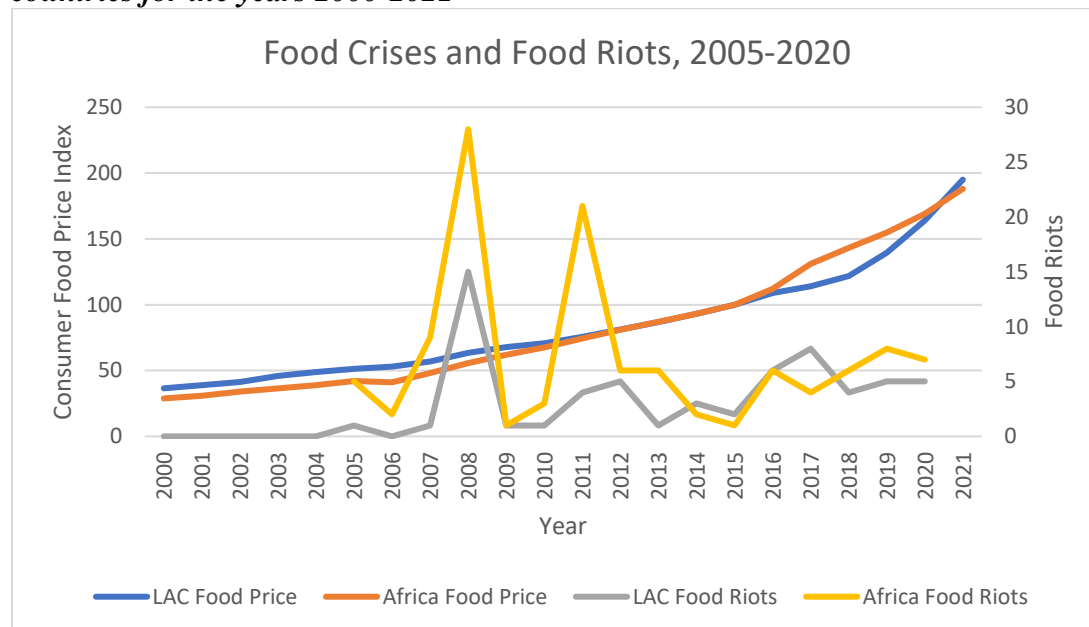
The pandemic of the covid-19 crisis has affected and continues to affect many people worldwide, as well as health issues, in the economic and subsistence aspects. The situation is most dramatic in the southern hemisphere countries, where there is almost no state protection against disasters like this and where inequality is alarming, as in Latin America, according to recent studies (RANALDI, and MILANOVIĆ 2022). Countless jobs simply gone, consumption suddenly dropped, and many people were virtually without income and with no conditions to buy food, not to mention housing, clothing, transportation, and/or leisure. Food prices skyrocketed, mainly because it affected the production cycle quickly. Those who already had difficulty sustaining themselves and their families before the pandemic began to have their situation aggravated, besides many more entering the poverty line. Most Latin American countries have a large workforce in agriculture, and this rural sector of the population have been strongly affected by the pandemics (BENITES-ZAPATA *et al* 2021; THE LANCET 2020).

Despite the fact that few studies have been published so far on the role of the pandemic in producing public events associated with regional or national disorder in countries, there is preliminary scientific evidence that times of abnormality arising from extreme situations such as the covid-19 pandemic have consequences such as riots and demonstrations against governments and demanding rights, and protesting against lockdowns and high food prices (CAMPEDELLI, and D'ORSOGNA 2021). Such social unrest is plausibly related to the difficulty that a considerable part of the population has in meeting their minimum subsistence conditions.

We can observe in Figure 1 the rise of food prices in African and Latin American countries. On average, the food prices have increased six-folded and five-folded, respectively, in the last two decades, leaving the most vulnerable population in these regions at the mercy of voluntary organizations and public policies that have rarely been able to adequately supply this sector. Poverty is concentrated in rural areas. Three-quarters of the world's poor live in the countryside (BORRAS Jr, and FRANCO 2012: 36). This is an unbearable situation that provides the opportunity for those who suffer from hunger or starvation to demand from the State policies that can guarantee the minimum conditions of livelihood. This is essential for

human preservation and there is a strong moral argument to be made that society must bear this burden, giving viable options to the neediest.

Figure 1: Consumer Food Prices Indexes and Food Riots for Africa and Latin American countries for the years 2000-2021⁶



Sources: FAO (2023) for food prices⁷; NEWMAN (2020) and HOCHSTETLER, and SAMUELS (2011) for food riots.

Food riots in both regions follow the same pattern. During the years of food crises (2007-8; 2011-2; 2020-1⁸), there are more food riots than in other years, following the logic that more expensive food makes it harder for the poor to acquire the minimum food for survival. There is also an overall tendency for an increase in the number of food riots. Although in Africa, in general, there were more food riots, in Latin American countries food riots became more frequent. There are countries where both higher food prices and food riots occurred almost at the same time. (Venezuela and Haiti are the Latin American outliers featuring very high food prices and many food riots, as well.)

⁶ Years 2000-2021 with monthly average food prices index (year 2021 being the average of the first 9 months). The data represents consumer prices, and food indexes of year 2015 = 100. Aggregate may include official, semi-official, estimated, or calculated data. The Food Riots data was taken from NEWMAN (2020) and HOCHSTETLER, and SAMUELS (2011), this last just for Latin American countries for the years 1979-2007. As these two datasets had similar definitions of food riots, both were merged, the period 2000-2004 from HOCHSTETLER AND SAMUELS (2011) and the period 2005-2020 from NEWMAN (2020), with the author of the latter sending the spreadsheet from the dataset directly to the author of this paper.

⁷<https://www.fao.org/worldfoodsituation/foodpricesindex/en/>.

⁸ No data for food riots in 2021.

ii. Land grabbing

In the last two decades (2000-2020) land grabbing has affected marginalized people from undeveloped and developing countries. Even though the number of deals in this period in the African and Asian regions has surpassed that of Latin America, in relation to the size of the land negotiated, Latin American countries only lag behind African countries in this regard, according to Figures 2 and 3, below.

A land deal is referred to as an intended, concluded or failed attempt to acquire at least 200ha of land through purchase, lease or concession (LAND MATRIX 2022).

Figures 02 and 03: Percentage of land deals and land size (ha.), 2000-2020



Source: land matrix dataset (2022)

These land acquisitions have to do with a variety of situations, such as concentration of land, dismissal of small farmers, massive investment of land in stock exchanges (FDI), producing inputs for renewable energy rather than food, and many more activities where large corporations benefit in ways that harm small farmers. Many have this occupation for generations, but are expropriated from their land/work (as owner, tenant, squatter, rural worker or similar), radically altering their way of life. Even though this subject is part of the studies on globalization, there has not been enough research in this area (MARGULIS, MCKEON, and BORRAS Jr. 2014).

The situation of the small farmers who do not have the legal right to land that they own or occupy, is common. This is obstacle to their greater productivity and investment to increase

future gains. In recent years, land grabbing has become widespread in Latin America, following similar trends in Africa. Multilateral agencies have sought to explain this phenomenon by arguing that these investments in land are driven by the rich endowments of natural resources of the countries in the region. This paper argues that this explanation is insufficient: the rich endowment of natural resources in Latin America cannot explain the rising transfer of land to foreign investors, as if this were a natural occurrence. Rather, the deepening commitment to development models based almost exclusively on the exploitation of these resources seems to be the key, such that the role of states becomes essential to the explanation of land grabbing. In fact, the emergence of many self-proclaimed *progressive* or *left* governments in the region at the beginning of the twentieth first century (and returning again in recent years) has not reversed the established structural dependency, based on an extractivist development model. Rather, it has deepened it (LAWRY *et al.* 2017).

Currently, developed countries have found mechanisms to reduce the aggravation of tensions arising from hunger and difficult access to livelihoods for the poorer strata of the population through social protection, supplying resources allowing the most vulnerably families to subsist adequately. Some such mechanisms are unemployment benefits, retirement assistance, emergency aid in response to natural disasters, child's benefits, maternity leave, etc. (ESSER *et al* 2009). Low-income countries have lower levels of social protection (NEWMAN 2020: 314). Some countries have found ways to reduce the impact of food shortages through land deals by which the land from countries with fertile land is "grabbed" and farm output is exported back to the investor country.

Unfortunately, developing or non-developed countries are not able to offer this type of help to the neediest in times of more severe economic crises, including in countries that are targets of land grabbing.

When tensions mount, there is often a lack of preparation of the security forces and the police, even under democratic regimes. Governments may repress demonstrations (many of them peaceful). This leads inexorably to a spiral of repression, causing clashes between the parties that may lead to the emergence of fatalities and injuries among those demanding better living

conditions and the right to food (NASSAUER 2018). Such food crises happened in 2007-8; 2011-2; and now during the covid-19 health crisis as well.

Figure 04: Number and size (by ha.) of land deals in Latin American countries



Source: land matrix dataset (2022)

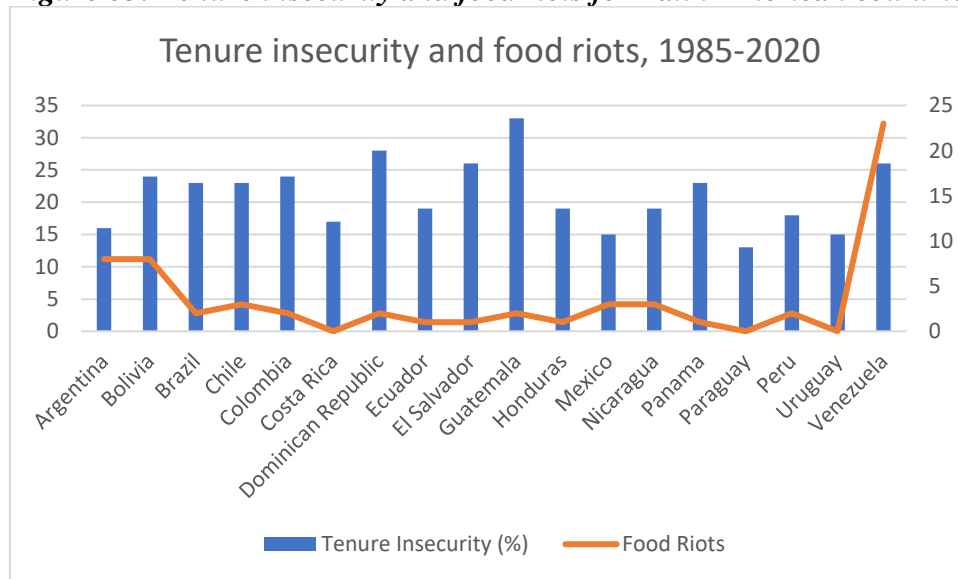
According to LAND MATRIX data (2022), from 2000-2020, there were attempted land acquisitions (accomplished or not) of almost 19 million hectares in Peru (18.6%), 10.5 million hectares in Argentina (26.8%), 9.5 million of hectares in Brazil (11.4%), 1.6 million hectares in Colombia (26.6%), 1.2 million hectares in Uruguay (48.5%) and 1.1 million hectares in Paraguay (22.9%).

Food riots are expressed by people with lower purchasing power, who spend a large part of their family budgets on food, about 70%-80%, unlike people with higher economic levels, which spend around 10%-15% of their income (OTTO *et al* 2017: 1654). When more land is sold or given over to land grabbing, part of that goes to the production of energy inputs, and less production is available for human and/or animal food needs. This makes food more expensive and makes it difficult for the poor to acquire/buy/own it. Small rural producers may be expelled from their land to make way for agribusiness, adding to the concentration of land

and relegating the small farmer to the margins of society. Many people in this predicament may join the food riots. In this way, land grabbing may contribute to more food riots.

More than a billion people fear eviction from the land and home they live in, where they have often lived for generations (PRINDEX 2020). Insecurity of tenure is a serious problem that affects many families and is directly related to land grabbing, as the land that is transferred to large conglomerates in developing countries could otherwise have been used to help reduce housing and livelihood insecurity for those living in the countryside. A survey carried out in recent years indicates that about 91 million people living in Latin America fear being evicted from their land and homes, with those who do not have documentation of ownership of where they live being the most affected. Although Figure 5 does not suggest any direct relation between the two factors, one does see that levels of tenure insecurity are considerable.

Figure 05: Tenure insecurity and food riots for Latin American countries⁹, 1985-2020



Sources: PRINDEX (2020) for tenure insecurity and NEWMAN (2020); HOCHSTETLER, and SAMUELS (2011) for food riots.

Tenure insecurity measures the percentage of people who feel insecure about a possible eviction in the next 5 years from their land and/or home. These very high numbers are compared to the number of food riots in each Latin American country. Although we cannot

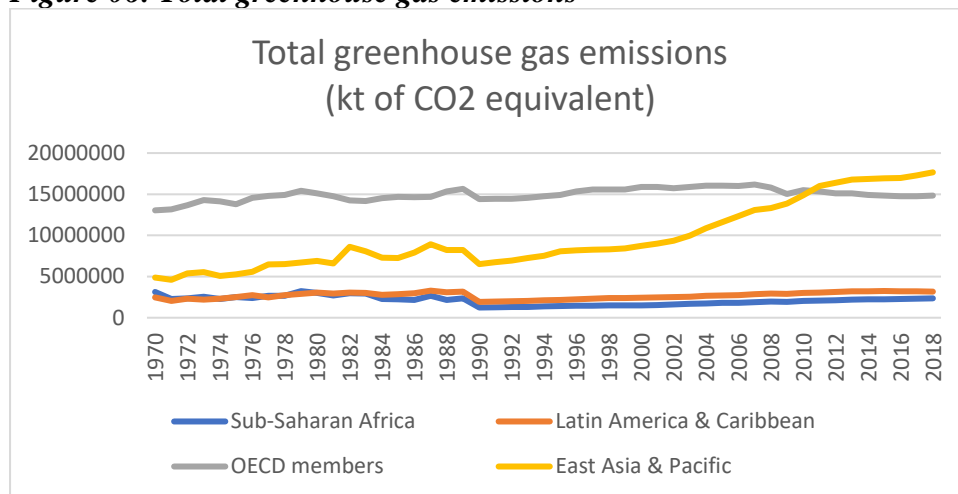
⁹ While data on tenure insecurity was collected in 2018 and 2019 for 140 countries for a face-to-face and telephone sample (however, no data for Cuba and Haiti), data on food riots in Latin America are accumulated by each country between 1985-2020 (and Cuba did not register any food riots for this period, while Haiti have registered 7 food riots).

draw conclusions from the descriptive data above, it is possible to have the dimension of both variables for a future association between them in further studies.

iii. *Climate change*

Compared to the rest of the world in terms of industry-related greenhouse gas emissions, fortunately Latin American states are well behind several developed countries (specifically OECD members) and some developing countries (such as China and Russia), standing a little above African countries only. (Figure 6)

Figure 06: Total greenhouse gas emissions¹⁰



Source: *Climate Watch Historical GHG Emissions 2022*¹¹

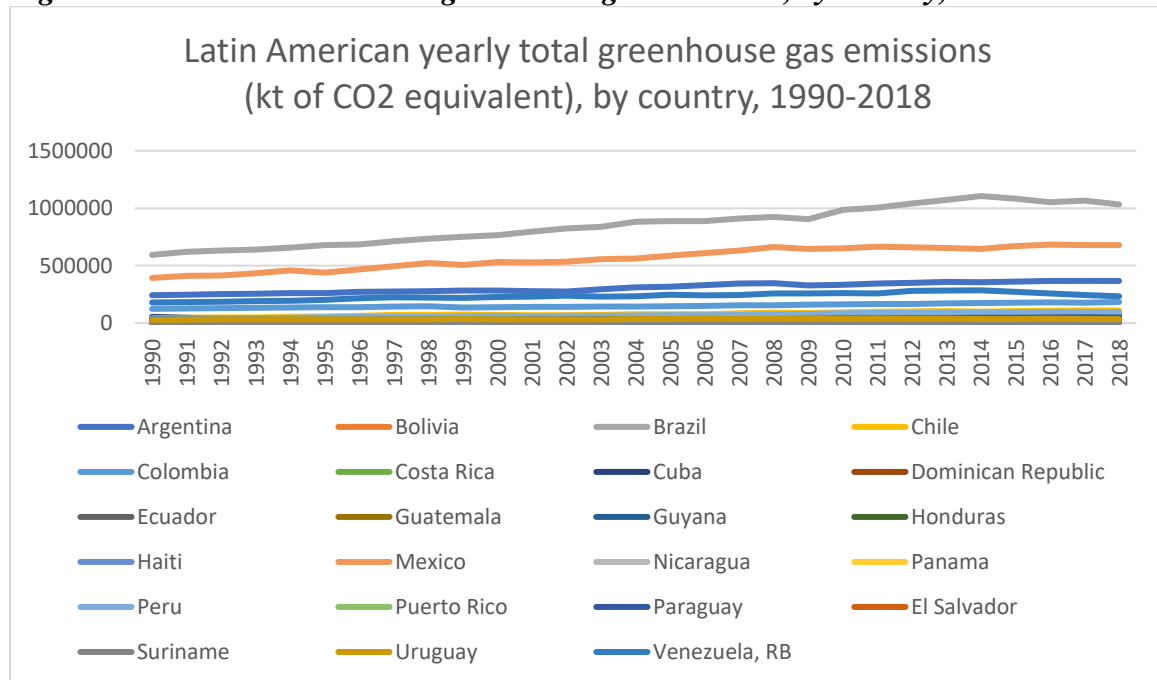
Latin America produces about 1/5 of the greenhouse gases that China/surrounding countries and other high-income nations emit. However, within the region, Brazil is in a much higher position, almost double the second ranked, Mexico, and almost triple the third, Argentina. The

¹⁰ Total greenhouse emissions are the sum of emissions of different type of gas, such as carbon dioxide (CO₂, the most dominant greenhouse gas produced by burning of fossil fuels, land use change and industrial production), methane, nitrous oxide, sulfur hexafluoride and hydrofluorocarbons, all harm human, animal and vegetal life.

¹¹ Last accessed on May 24th 2022 at https://data.worldbank.org/indicator/EN.ATM.GHGT.KT.CE?end=2018&name_desc=false&start=1970&view=chart

others are far behind, which is to be expected, given the gap in levels of development across these countries.

Figure 07: Latin American total greenhouse gas emissions, by country, 1990-2018



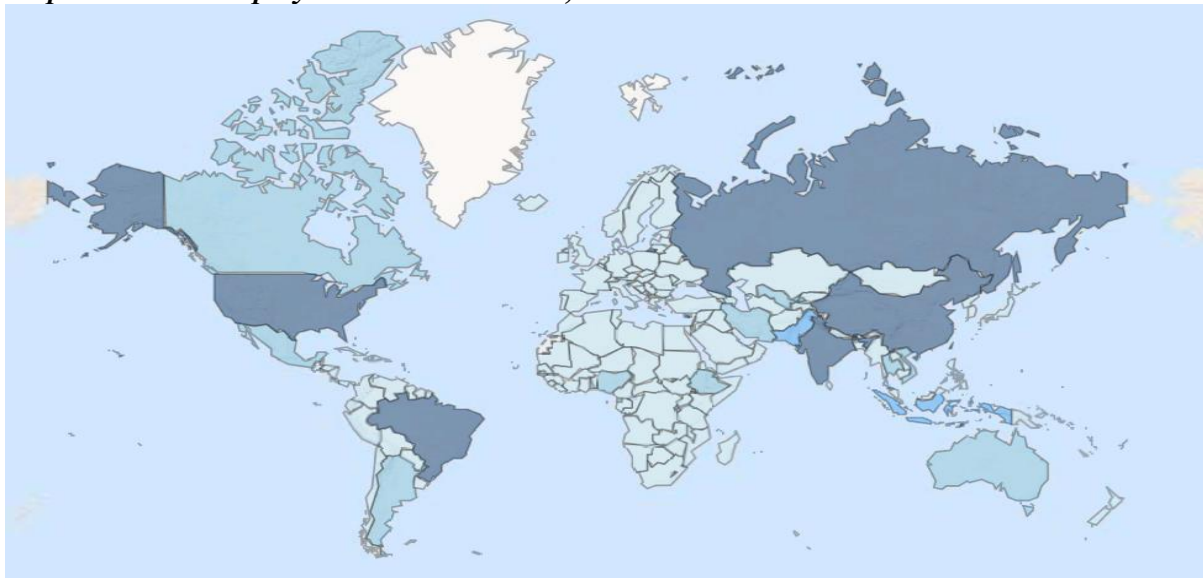
Source: Climate Watch Historical GHG Emissions 2022¹²

What draws attention in the evolution of the level of emission of these gases is the situation of East Asia & Pacific countries, which now serve as the industrial heartland of the world, grew more than 5 fold in less than half a century. This is very worrying regarding the environment. And several Latin American countries have indirectly been part of this process as raw material suppliers. This continuous growth, which at first is positive in terms of improving the quality of life of their populations, is also related to the emission of pollutants which has reached an unprecedented level, and contributes strongly to the risk of climate change. International agreements to reduce the emission of greenhouse gases must be bolder and with higher targets so that the damage is not irreversible. One fundamental example are the *Paris Accords*, which set emission targets so that the reduction in temperature rise remains below 2°C for the next

¹² Last accessed on May 24th, 2022 at <https://data.worldbank.org/indicator/EN.ATM.METH.KT.CE?view=map>

few years, requiring countries to commit to relevant environmental concessions (DA SILVA *et al* 2019b; RODRÍGUEZ-FERNANDEZ, CARVAJAL, and BUJIDOS-CASADO 2020: 2).

Map 01: World map by methane emissions, 2018



Source: Carbone Dioxide Information Analysis Center, Environmental Sciences Division, Climate Watch, 2020¹³

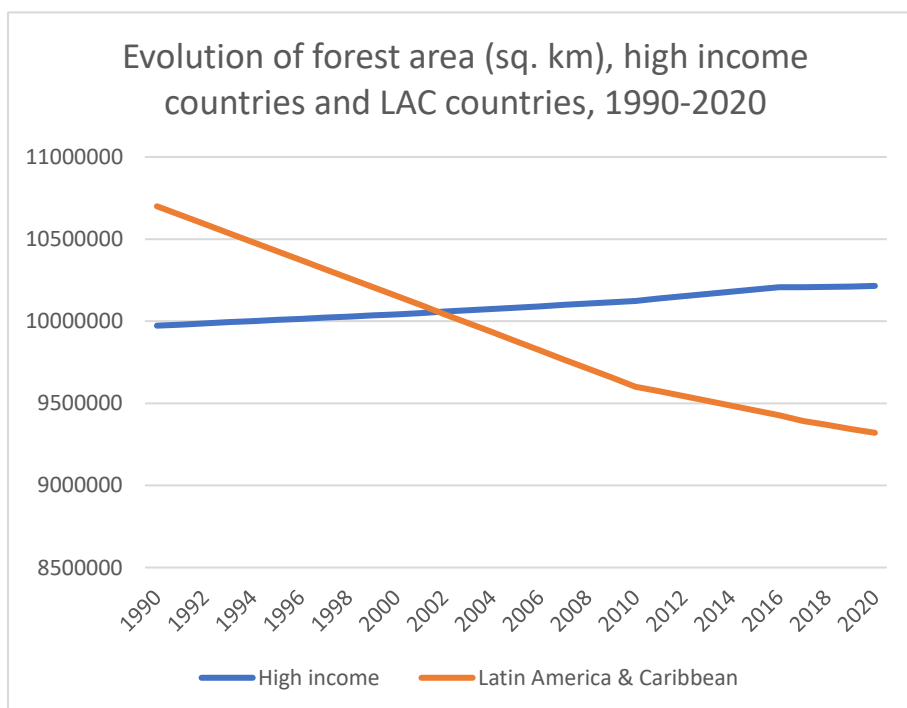
Several Latin American countries have reached agricultural and livestock self-sufficiency and even export part of their products to the world. Methane emissions also result from livestock and other agricultural practices using land. This growth in food and meat exports may contribute to food security for many countries around the world, but at a high social cost at home. It affects the most vulnerable sections of the population, contributing to the rise in food prices in times of crisis in the countries of the region.

The economic and quality of life improvement in countries with large populations, such as China and India (which alone represent 35% of the world population), radically induces a change in the diet of these individuals, driving increases in the production of food inputs, cereals, grains, vegetables, meat, poultry in countries that specialize in this sector. Several in Latin America are included in this context (HAN, CHAI, and XIAWEI 2020; VETTER *et al* 2017; NATH *et al* 2015).

¹³ Middle-Blue color: Argentina: 117,850, Mexico: 144,610. Dark color: Brazil: 416,280, USA: 622,590, India: 666,510, Russian Federation: 849,570, China: 1,238,630. www.climatewatchdata.org/ghg-emissions

Deforestation and forest degradation release stored carbon, which also contributes to global warming. Deforestation is the second responsible for climate change, and represents approximately 10% of CO₂ in the atmosphere (APERGIS; PAYNE 2010). According to the figure (evolution of forest area) we can see that in the last 30 years there has been a significant reduction in the forest area in Latin American countries, from almost 11 million square km to just over 9 million square km. In high-income countries, there has been a small increase in the last three decades, from almost 10 million square km to more than 10.2 million square km.

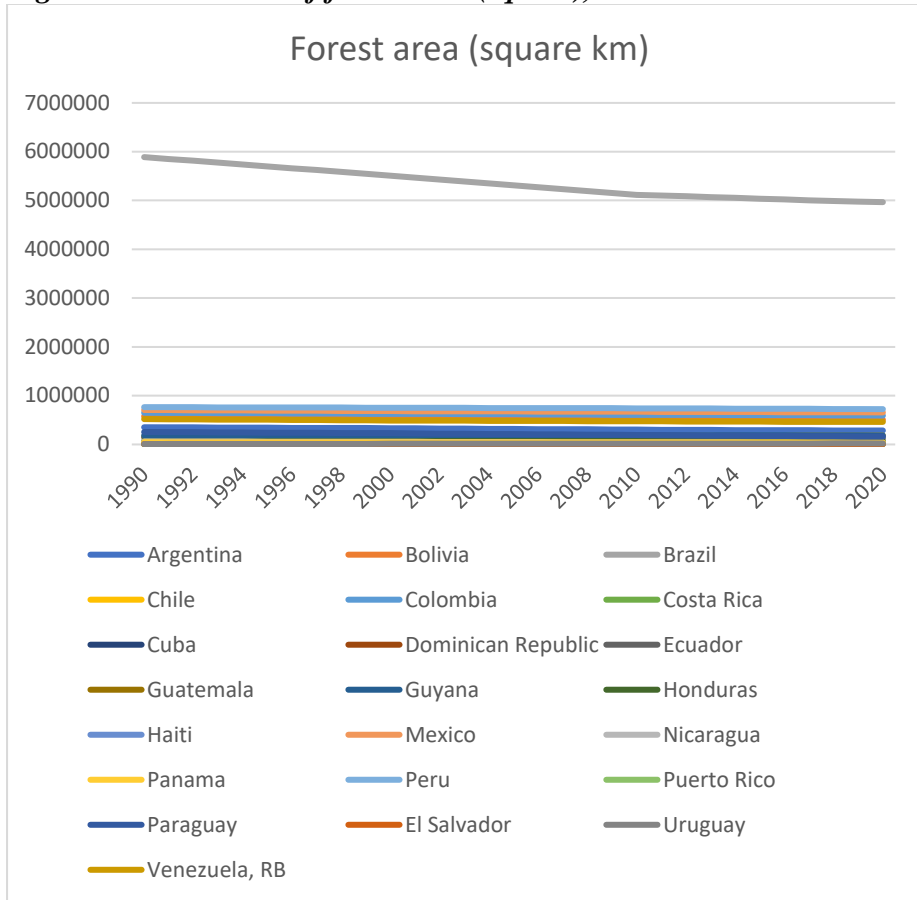
Figure 08: Evolution of forest area (sq. km), high income countries and Latin American countries, 1990-2020



Source: FAO 2022, FAOSTAT Emissions Database¹⁴

¹⁴ <https://data.worldbank.org/indicator/AG.LND.FRST.K2?view=map>

Figure 09: Evolution of forest area (sq. km), within Latin American countries, 1990-2020



Source: FAO 2022, FAOSTAT Emissions Database¹⁵

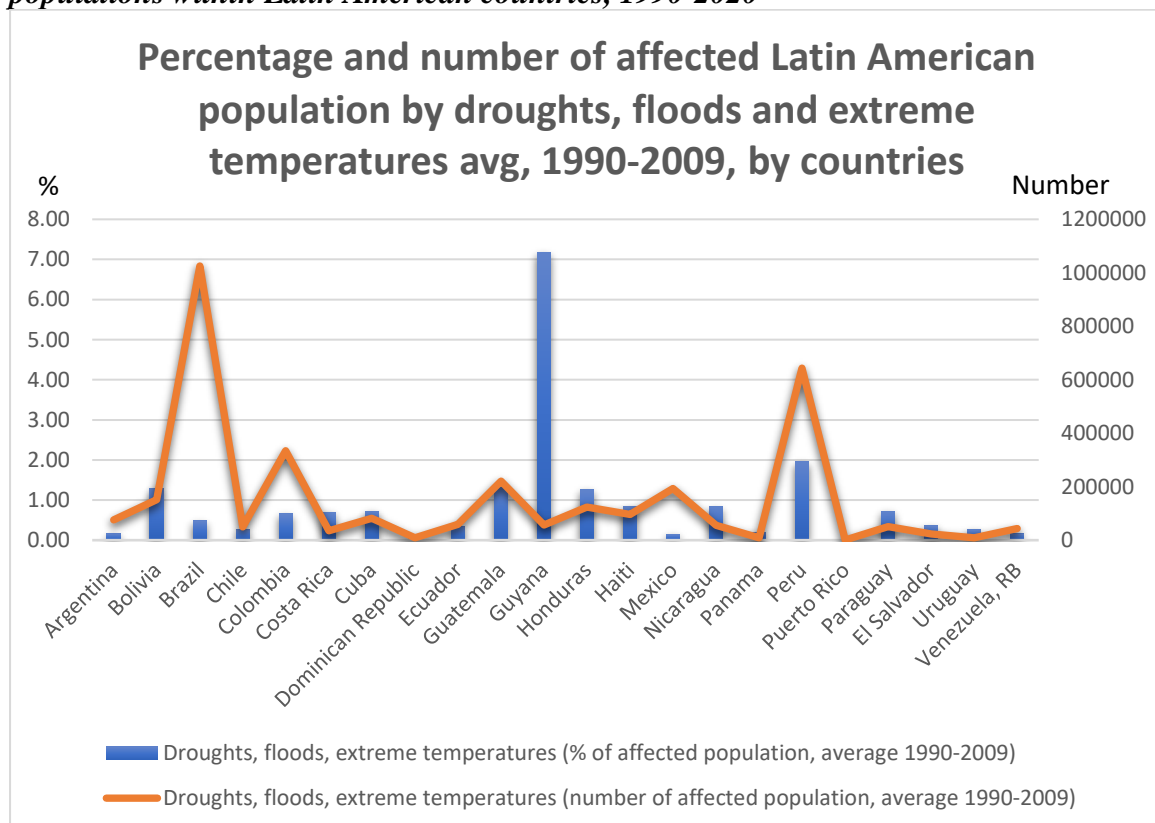
If we compare only Latin American countries in terms of forests and deforestation, the great difference between Brazil and the remain countries of this region stands out clearly, due to the continental dimensions of Brazil and Brazil's having 60% of the largest rainforest in the world, the Amazon rainforest. In 2020 Brazil had almost 5 million sq. km of forests and the next country in the region, Peru, had just over 720 thousand sq. km. Everyone else had less than that. Brazil had a deforestation in the last 30 years of about 922 thousand sq.km of forest area, which certainly has an impact on climate change (AIDE *et al* 2013).¹⁶

¹⁵ <https://data.worldbank.org/indicator/AG.LND.FRS.K2?view=map>

¹⁶ This account considers the continuous loss of 922,000 square km every 3 decades, which would take about 6 times 30 years to deforest an area of 5,532,000 square km, little more than the existing in the entire Brazilian Amazon if this same path and measure of the current deforestation is continued. If this deforestation continues at the same path, within about 180 years there will be no more forest in the Brazilian Amazon and the impact on the planet will be devastating. Therefore, environmental issues concern all inhabitants, regardless of where the devastation may occur, as everyone will be penalized with such results (HOSONUMA *et al* 2012).

Disasters, many of which are known as "natural", often occur by reactions to what human beings do to the environment (DOKTYCZ, and ABKOWITZ 2019). Occurrences such as droughts, earthquakes, extreme temperature, flood, landslide, storm, volcanic activity, wildfire and additional types can be the result of the imbalance caused to nature in predatory practice, be it CO2/methane pollution, deforestation, and/or other kind of nature devastation.

Figure 10: Droughts, floods, extreme temperatures - percentage and number of the affected populations within Latin American countries, 1990-2020¹⁷



Source: Centre for Research on the Epidemiology of Disasters, CRED, 2022

We can visualize in the above figure droughts, floods, extreme temperatures that affected the populations of Latin America between the years 1990-2009, according to the CRED disaster report.

"A drought is an extended period of time of losses characterized by a deficiency in a region's water supply that is the result of constantly below average precipitation. [It] can affect agriculture, [...] inland navigation and hydropower plants, cause a lack of drinking water and famine. A flood is a significant rise

¹⁷ <https://data.worldbank.org/indicator/AG.LND.FRST.K2?view=map>

of water level in a stream, lake, reservoir, or coastal region. Extreme temperature events are either cold waves or heat waves. A cold wave can be both a prolonged period of excessively cold weather and the sudden invasion of very cold air over a large area. Along with frost it can cause damage to agriculture, infrastructure, and property. A heat wave is a prolonged period of excessively hot and sometimes also humid weather relative to normal climate patterns of a certain region " ([INTERNATIONAL DISASTER DATABASE 2022](#))¹⁸

On the left side of the figure there is the percentage of people from Latin American countries who were affected and on the right side there is the absolute number of these same affected individuals¹⁹.

Around 3,348,708 people were affected by droughts, floods, and extreme temperatures within Latin America, according to the figure data. In Guyana, for example, about 3/4 of the population live on the coastal area, where the major economic activities are located, such as agriculture, fisheries and industries, and the observed high temperatures are leaving several cities literally underwater. Unfortunately, the trend is to get worse, as in its capital Georgetown and other coastal areas throughout Latin America such as Barranquilla and Cartagena (Colombia), Cubana and Maracaibo (Venezuela), Cancun and Tampico (Mexico) and San Juan (Puerto Rico), according to reports and studies (REGUERO *et al* 2015; PELLING 1997).

Something similar has happened in Peru, where its capital Lima, with 10 million inhabitants, suffers from floods and droughts because of the increase in temperature, and harms some Amazon Peruvian food systems (VILLACORTA *et al* 2019; SHERMAN *et al* 2015).

In Brazil, as the population is the largest in the region, deforestation greatly affects the climate, also causing floods, droughts, and landslides²⁰. As many houses are built precariously on ravines, every summer the rains increase in volume and intensity, leaving many people homeless and fatal victims of the floods (MENEZES *et al* 2018; LI *et al* 2021; DA SILVA *et al* 2019a).

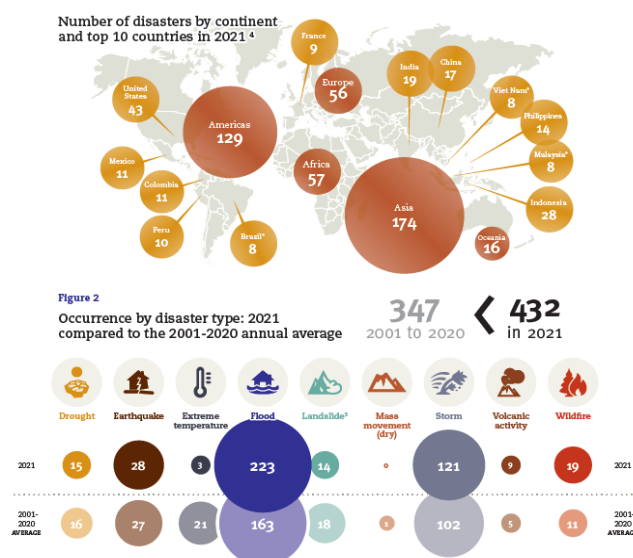
¹⁸ <https://data.worldbank.org/indicator/EN.CLC.MDAT.ZS>

¹⁹ These numbers were calculated by the percentage of the population of each country, according to data obtained from the World Bank database in the year 2021.

²⁰ In the days I write the empirical climate change section of this article alone, even at a time when rains were not usually torrential for autumn (they tend to be during the summer season of the southern hemisphere), flooding and heavy rain killed over a hundred people in the metropolitan region of Recife, northeast Brazil, at the end of May 2022 (<https://www.cbsnews.com/news/brazil-flooding-landslides-over-100-deaths/>)

When we compare the data referring to those affected by disasters in Latin America to those in other regions of the planet (see figure 13 below, CRED 2022), especially those in Asia, it seems a negligible amount. However, in addition to every life counting, regardless of where it occurs, it is equally essential to investigate the causes of such disasters to prevent them in the future. And as we discussed previously, Latin America could collaborate by drastically reducing deforestation as a way of preventing the release of more CO2 and methane into the atmosphere (MACEDO 2021), so that temperatures do not rise at the current rampant pace, reducing the level of floods, droughts, landslides and wildfires, both in the region itself, as in other places as well, since the effects are not felt only in the locations where there are predatory activities carried out by human beings, but spread across the planet.

Figure 11: Occurrence of disasters²¹



Source: Extracted from CRED 2022: 4

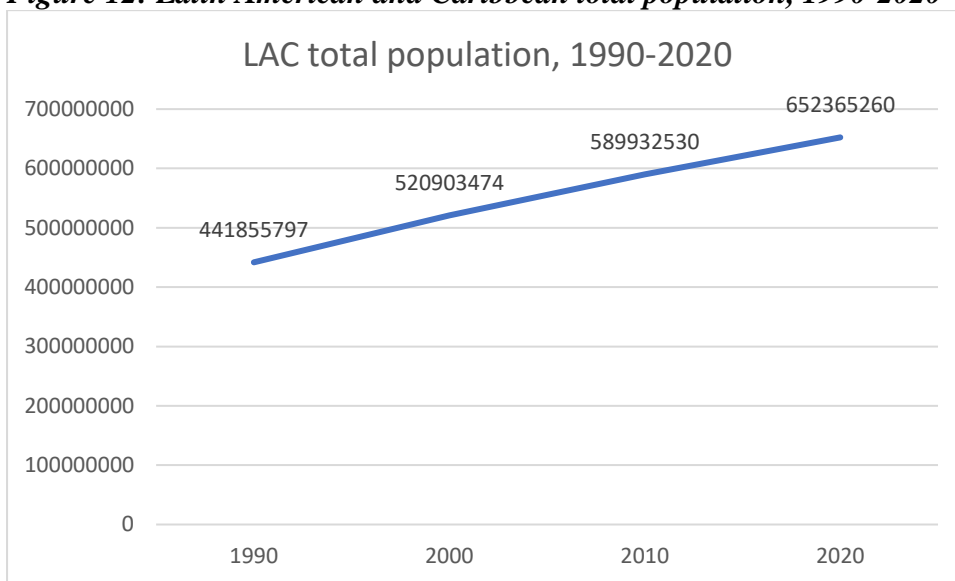
Science has found an association between the predatory actions of humans with adverse climatic effects. We see that such phenomena occur in the Latin American region and that they probably affect agriculture and livestock, causing enormous damage to human food supply, especially for the most vulnerable who, when mobilized, may actively participate in food riots.

²¹ Available at: https://cred.be/sites/default/files/2021_EMDAT_report.pdf

iv. Demographic pressures

The Latin American population has been increasing since the redemocratization of many countries in that region from the mid-1980's. In a period of just thirty years, the Latin American population has increased by a third. The UN projection is that it will still grow by more than ten percent by 2050. This is a significant amount of people, who will increase pressure on the use of natural resources, causing even greater stress than today. Societies will need plant and animal foods to satisfy not only many more people, but also with a more protein-rich diet.

Figure 12: Latin American and Caribbean total population, 1990-2020²²

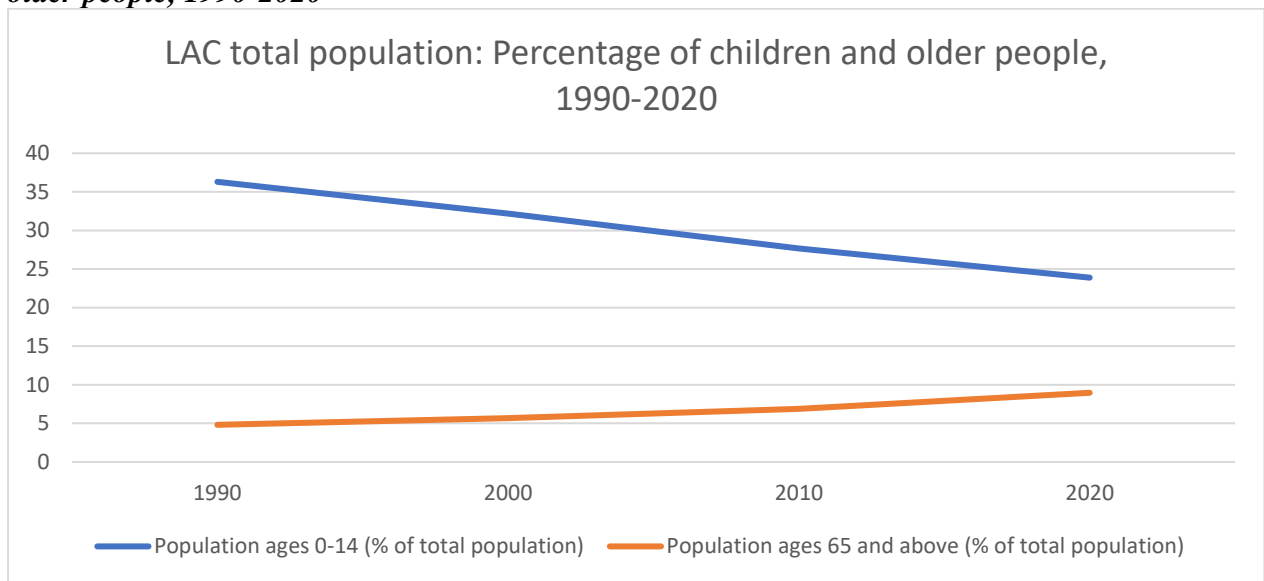


Source: Extracted from *The World Bank: IBRD/IDA, 2022*

Despite the fact that Latin American population is growing substantially, when we analyze which age groups are responsible for this growth, we can see that there is a drop in children (0-14 years old). This is matched by a sudden increase in the numbers of older people (65 years old or more), since the improvement in the quality of life has allowed people to live longer. Therefore, there is population growth along with the ageing of the population.

²² Available at: <https://data.worldbank.org/>

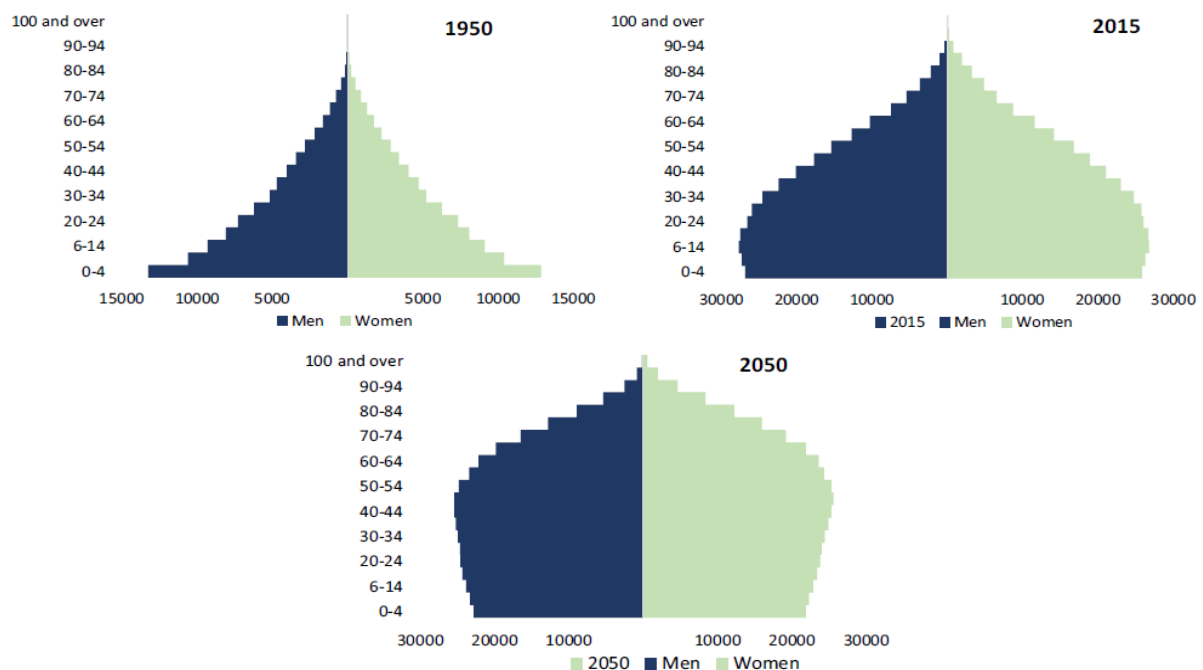
Figure 13: Latin American and Caribbean total population: Percentage of children and older people, 1990-2020²³



Source: Extracted from *The World Bank: IBRD/IDA, 2022*

Through a more detailed fragmentation of age groups in a period of a century (including future projections), between 1950 and 2050, the change clearly takes place from a pyramidal to a pentagonal format, as the following figure shows.

Figure 14: Latin American population by sex and age group (in thousands)



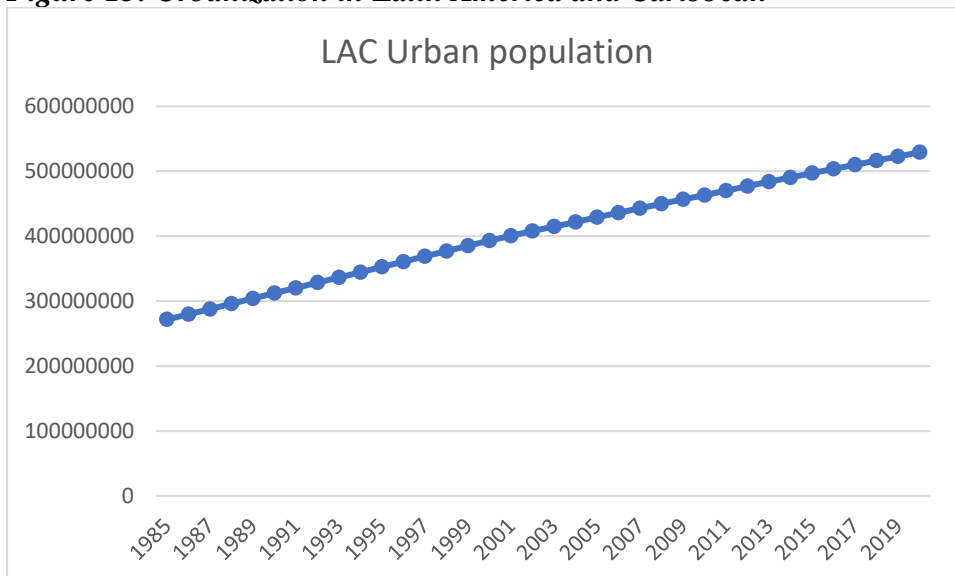
Source: Extracted from AMARANTE, COLACCE, and MANZI 2021, p. 846, originated data from ECLAC 2016

²³ Available at: <https://data.worldbank.org/>

This is the overall figure, on average, for Latin America. However, of course, there are differences between the countries in this region, with Uruguay, Argentina and Chile, in this order, showing a higher percentage of elderly people growth than the remainder countries.

The unbridled rhythm of the population of Latin American countries, which, not finding opportunities in rural areas, move to urban centers with the hope for a better life, contributes to a chaotic growth of urbanization in developing countries, without effectively improving their quality of life. Those are unskilled workers and already marginalized people, increasing the discontents within cities (GLAESER 2020).

Figure 15: Urbanization in Latin America and Caribbean



Source: Extracted from *The World Bank: IBRD/IDA*, 2022

That's why the (at least) official numbers of urban populations show us, according to the World Bank data of urban population during the redemocratization of Latin American countries (since mid-1980's), as seen in the above figure. It almost doubled in 35 years. This was an unplanned growth, with no infrastructure, and people crowding into precarious housing, no sewage and piped water, in addition to the difficulty of absorbing more newcomers into public services such as education, health and public security.

In this context of sharp growth of unplanned urbanization and discontent of the masses, mobilizations for popular demands within new and fragile democracies, such as protests against

high food prices, tend to grow, and this is what happened in many of the countries in the region (VICINO, and FAHLBERG 2017).

What can be learned from the demographic data presented? There are opposing currents regarding the participation of people in food riots: (i) on the one hand, the increase in population requires more resources and food available for all and suitable for human consumption and supposedly riots would be larger in size and with more incidence to claim food. (ii) On the other hand, the greater ageing of the population (which is the fastest growing age group in the population, as we could observe) at first, would be less participatory in such events, emptying mobilizations characteristic of younger people.

v. *Political polarization*

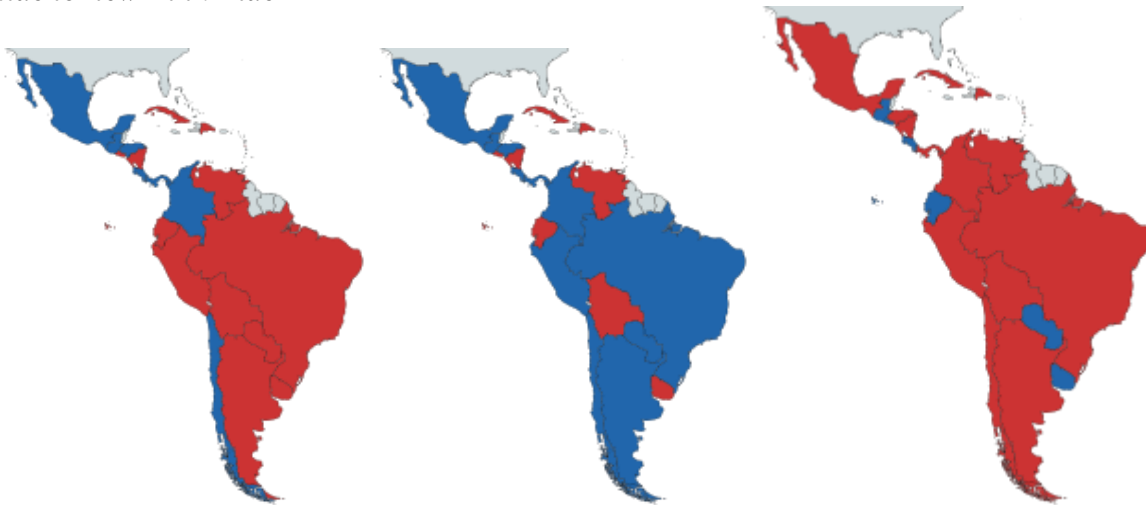
From the first decade of the twenty-first century, the world witnessed a *pink tide* in Latin America, that is, the rise of a leftist ideological tendency in the countries of South America. “In the mid-2000s...Venezuela, Argentina, Brazil, Chile, Uruguay, Paraguay, Ecuador, and Bolivia, or three-quarters of South America’s population (some 350 million people), were under left-wing rule” (ENCARNACIÓN 2018).

In the second decade of the twenty-first century, this trend has turned in the opposite direction. Right-wing doctrines (LEVY, and LARRABURE 2021) associated with a *blue* (or conservative) *tide* came to prevail in Brazil, Argentina, Uruguay, Bolivia, and Chile. They turned right either through elections or coup d’états. (Certain political changes have given rise to divergent opinions among analysts concerning the nature of these regimes.)

Even so, at the end of the second decade and the beginning of the third decade of this century, a so-called *new pink tide* became the main ideological-political trend with elections in Chile, Colombia²⁴, Bolivia, and Brazil. Brazil's electorate voted for the left-wing candidate Lula da Silva in the October 2022 elections for his third (non-consecutive) mandate, to take office in January of 2023. This region seems to be changing its political ideological course once again.

²⁴ In June 2022 the leftist candidate Gustavo Petro won the second round of elections in Colombia and made for the first time a leftist government to be elected in this country.

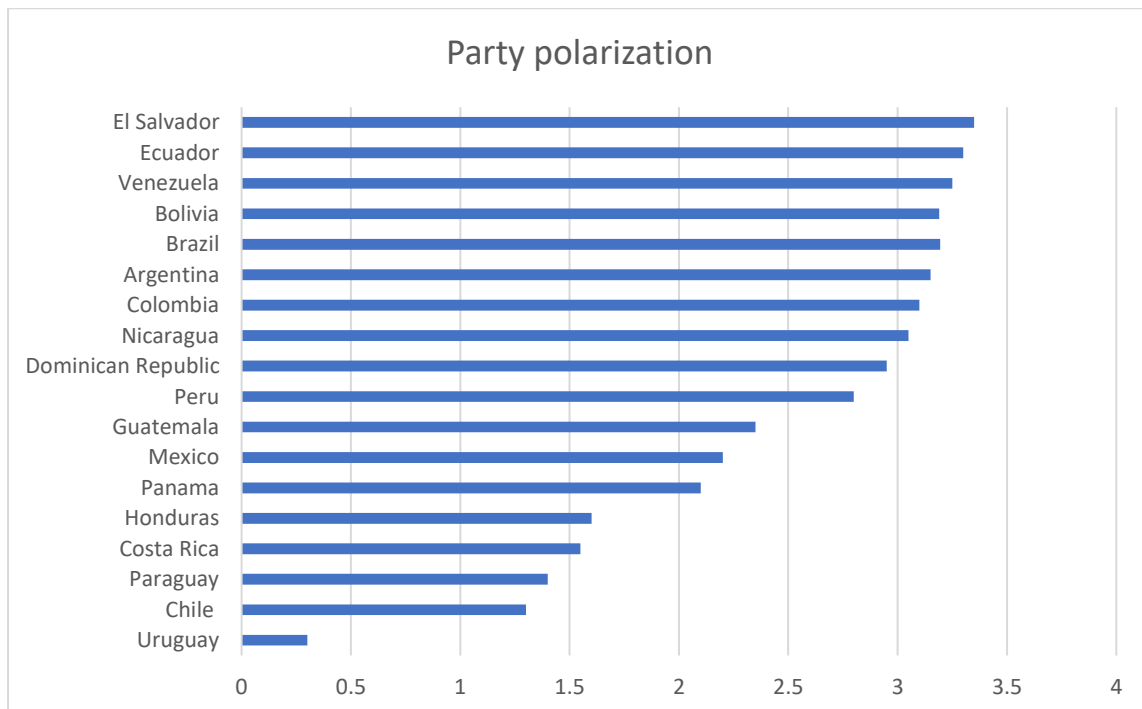
Maps 02: Political-ideological changes in Latin America, 2001-2022, from Pink Tide to Blue tide to new Pink Tide



Source: Available at RATIONAL WIKI (2023)

It is clear that political reality changes very fast in Latin America. Pernicious forms of political polarization could endanger democracy and increase the level of violence, including violent food riots. This is more likely during times of economic, social, and political crises. Recent political waves, from the pink tide to the blue tide and then to the new pink tide, produce volatility and contribute to growing party polarization, as we can see in Figure 16, below.

Figure 16: Mean of party polarization across Latin American countries, 1992–2018



Source: Extracted from Moraes, and Béjar, 2022, p.2

Although party polarization itself can work in both directions, the pernicious forms of polarization observed in some Latin American countries have been marked by the rise of populist candidates, some of whom have won elections. This may contribute to forces that combine to make food riots more likely.

III. Concluding remarks

The sections of this paper have used available data to describe some forces that can contribute to the occurrence of food riots in Latin American countries, especially within the rural environment. Food crises affect more and more people in the world, especially the poorest who are concentrated in rural areas. Forces that contribute to the lack (or insufficiency) of food may contribute to the occurrence of food riots. This paper tries to highlight some of these links, in an effort to better understand the phenomenon. Confrontation with police forces often escalates from peaceful protests to violent riots, which can result in many casualties.

Countries that most suffer from food riots' impact are those in the southern hemisphere. These are undeveloped and developing countries that do not have adequate systems of government benefits to assist the most vulnerable people.

This paper pointed out that *land grabbing*, *climate change*, *demographic pressures*, and *political polarization*, together with *inequality* and *hybrid political regimes*, may be related to each other, and may contribute to food insecurity and, ultimately, to the occurrence of food riots. However, in order to specify the links and understand causal mechanisms, it is necessary to collect new data that can establish causality or refute it. In this way, we will be able to advance our understanding of food riots and the factors that contribute to them.

References

- AIDE, T. Mitchell; CLARK, Matthew L.; GRAU, H. Ricardo; LÓPEZ-CARR, David; LEVY, Marc A.; REDO, Daniel; BONILLA-MOHENO, Martha; RINER, George; ANDRADE-NÚÑEZ, María J.; MUÑIZ, María (2013). “Deforestation and Reforestation of Latin America and the Caribbean (2001-2010)”. *Biotropica*, 45(2), pp.262–71. <http://www.jstor.org/stable/23525534>
- AMARANTE, Verónica; COLACCE, Maira; MANZI, Pilar (2021). “Aging and productivity in Latin America”. *Latin American Research Review*, 56(4), pp.844-863 doi:10.25222/larr.924
- APERGIS, Nicholas; PAYNE, James E. (2010). “Energy consumption and growth in South America: Evidence from a panel error correction model”. *Energy Economics*, 32, pp.1421-1426
- BELLEMARE, Marc F. (2015). “Rising Food Prices, Food Price Volatility, and Social Unrest”. *American Journal of Agricultural Economics*, 97(1), pp. 1–21. <http://www.jstor.org/stable/24476998>
- BENITES-ZAPATA, Vicente A. et al (2021). “Prevalence and factors associated with food insecurity in Latin America and the Caribbean during the first wave of the COVID-19 pandemic”. *Heliyon*, 7(10), ISSN 2405-8440, <https://doi.org/10.1016/j.heliyon.2021.e08091>
- BORRAS Jr, Saturnino M.; McMICHAEL, Philip; SCOONES, Ian (2010) “The politics of biofuels, land and agrarian change: editors' introduction”. *The Journal of Peasant Studies*, 37(4), pp. 575-592, DOI: 10.1080/03066150.2010.512448
- BORRAS Jr, Saturnino M.; FRANCO, Jennifer C. (2012). “Global Land Grabbing and Trajectories of Agrarian Change: A Preliminary Analysis”. *Journal of Agrarian Change*, 12(1), pp.34-59
- BUSH, R.; MARTINIELLO, G. (2017). “Food riots and protest: Agrarian modernizations and structural crises”. *World Development*, 91, pp.193-207
- BUSH, Ray (2010). “Food riots: Poverty, power and protest”. *Journal of Agrarian Change*, 10(1), pp.119-129
- CAMPEDELLI, G.M.; D’ORSOGNA, M.R. (2021). “Temporal clustering of disorder events during the COVID-19 pandemic”. *PLoS ONE*, 16(4): e0250433. <https://doi.org/10.1371/journal.pone.0250433>
- CHOMITZ, K.M.; BUYS, P.; THOMAS, T.S. (2005). “Quantifying the urban-rural gradient in Latin America and the Caribbean”. *World Bank Policy Research Working Paper*, 3634, pp.1-35
- COOPER, Matthew; MULLER, Benjamin; CAFIERO, Carlo; BAYA, Juan Carlos Laso; CUARESMA, Jesus Crespo; KHARAS, Homi (2021). “Monitoring and Projecting Global Hunger: Are We on Track?”. *Global Food Security*, 30, pp.1-7

- CRED (2022). *2021 Disasters in numbers*. Brussels: CRED, pp.1-8. This document is available at: https://cred.be/sites/default/files/2021_EMDAT_report.pdf
- DA SILVA, Pollyanne Evangelista; SANTOS E SILVA, Cláudio Moisés; SPYRIDES, Maria Helena Constantino; ANDRADE, Lára De Melo Barbosa (2019a). "Precipitation and Air Temperature Extremes in the Amazon and Northeast Brazil". *International Journal of Climatology*, 39(2), pp.579-95
- DA SILVA, Silvia R. Santos; MIRALLES-WILHELM, Fernando; MUÑOZ-CASTILLO, Raul; CLARKE, Leon E.; BRAUN, Caleb J.; DELGADO, Alison; EDMONDS, James A.; HEJAZI, Mohamad; HORING, Jill; HOROWITZ, Russell; KYLE, Page; LINK, Robert; PATEL, Pralit; TURNER, Sean; MCJEON, Haewon C. (2019b). "The Paris Pledges and the Energy-water-land Nexus in Latin America: Exploring Implications of Greenhouse Gas Emission Reductions". *PloS One*, 14(4), pp.1-26
- DOKTYCZ, C.; ABKOWITZ, M. (2019). "Loss and damage estimation for extreme weather events: State of the practice". *Sustainability*, 11(15), pp.1-13. <https://doi.org/10.3390/su11154243>
- ECDPM (2019). "The complex link between climate change and conflict". *ECDPM Great Insights*, 8(4), pp.1-40
- ENCARNACIÓN, Omar G. (2018). "The rise and fall of the Latin American left". *The Nation*. May 9th. Available at: <https://www.thenation.com/article/archive/the-ebb-and-flow-of-latin-americas-pink-tide/>
- ESSER, I.; FERRARINI, T.; NELSON, K.; SJÖBERG, O. (2009). "A framework for comparing social protection in developing and developed countries: The example of child benefits." *International Social Security Review*, 62(1), pp. 91-115.
- FAO [Food and Agriculture Organization] (2023). *Food Price Index Dataset*. <https://www.fao.org/worldfoodsituation/foodpricesindex/en>
- FAO [Food and Agriculture Organization] (2022). *FAOSTAT Emissions Database*.
- FAO [Food and Agriculture Organization] (1996). *Rome Declaration on World Food Security*.
- FENG, Siyuan; ZHAO, Wenwu; ZHAN, Tianyu; YAN, Yue; PEREIRA, Paulo (2022). "Land Degradation Neutrality: A Review of Progress and Perspectives". *Ecological indicators*, 144, pp.2-7
- FUKASE, Emiko; MARTIN, Will (2020). "Economic Growth, Convergence, and World Food Demand and Supply". *World Development*, 132, pp.1-12
- GARCIA-ARIAS, Jorge; CIBILS, Alan; COSTANTINO, Agostina; FERNANDES, Vitor B.; FERNÁNDEZ-HUERGA, Eduardo (2021). "When Land Meets Finance in Latin America: Some Intersections between Financialization and Land Grabbing in Argentina and Brazil". *Sustainability* (Basel, Switzerland), 13(14): 8084, pp.1-37

- GLAESER, Edward L. (2020). "Urbanization and its discontents". *Eastern Economic Journal*, 46(2), pp. 191-218. doi:<https://doi-org.gate3.library.lse.ac.uk/10.1057/s41302-020-00167-3>
- HAN, Aixi; CHAI, Li; Liao, XIAWEI (2020). "Demographic scenarios of future environmental footprints of healthy diets in China". *Foods*, 9(8), pp. 1-18
- HOCHSTETLER, Kathryn; SAMUELS, David (2011). "Crisis and rapid reequilibration: The consequences of presidential challenge and failure in Latin America. *Comparative Politics*, 43(2), pp.127-145
- HOSONUMA, Noriko; DE SY, Martin Herold Veronique; DE FRIES, Ruth S.; BROCKHAUS, Maria; VERCHOT, Louis; ANGELSEN, Arild; ROMIJN, Erika (2012). "An Assessment of Deforestation and Forest Degradation Drivers in Developing Countries". *Environmental Research Letters*, 7(4), pp.1-12
- HUSSAIN, Naomi; KALITA, Devangana; OMONDI, Bonface; POSSE, Lucio; RAAJ, Vaibhav; RAHMAN, Mohammed Ashikur; SAMBO, Michael (2017). "Framing 'food riots': Subsistence protests in international and national media, 2007-2012". IN: *Food Riots, Food Rights, and the Politics of Provisions* (Edited by Naomi Hussain, Patta Scott-Villiers), 1st edition. Milton: Routledge, pp.53-75
- INTERNATIONAL DISASTER DATABASE, OFDA/CRED (2022). *Droughts, Floods, Extreme Temperatures (% of population, average 1990-2009)*. Université Catholique de Louvain, Brussels, Belgium, World Bank <https://data.worldbank.org/indicator/EN.CLC.MDAT.ZS>
- LAND MATRIX (2022). <https://landmatrix.org/>
- LAWRY, Steven; SAMII, Cyrus; HALL, Ruth; LEOPOLD, Aaron; HORNBY, Donna; MTERO, Farai (2017). "The Impact of Land Property Rights Interventions on Investment and Agricultural Productivity in Developing Countries: A Systematic Review". *Journal of Development Effectiveness*, 9(1), pp. 61-81
- LEBDIOUI, Amir (2022). *Latin American Trade in the Age of Climate Change: Impact, Opportunities, and Policy Options*. Canning House: Latin America and Caribbean Centre, LSE, 2022. Print.
- LEVIN-WALDMAN, Oren M. (2021) *Inequality and the Crisis of Capitalism: A Review Essay*. Forum for Social Economics, DOI: 10.1080/07360932.2021.1937270
- LEVY, Chairmain; LARRABURE, Manuel (2021). "Introduction to 'Pink Tides, Right Turns in Latin America' special issue". *Globalizations*. doi: 10.1080/14747731.2021.1978628
- LI, Sihan; SPARROW, Sarah N.; OTTO, Friederike E. L.; RIFAI, Sami W.; OLIVERAS, Imma; KRIKKEN, Folmer; ANDERSON, Liana O.; MALHI, Yadvinder; WALLOM, David (2021). "Anthropogenic Climate Change Contribution to Wildfire-prone Weather Conditions in the Cerrado and Arc of Deforestation". *Environmental Research Letters*, 16(9), pp.1-14

- LUPU, Noam (2015). "Party Polarization and Mass Partisanship: A Comparative Perspective". *Political Behavior*, 37(2), pp. 331–56
- MACEDO, Gustavo (2021). "Climate Security, the Amazon, and the Responsibility to Protect". *Brazilian Political Science Review*, 15(3), pp.1-28
- MARGULIS, Matias E.; MCKEON, Nora; BORRAS Jr, Saturnino M.(2014) "Land Grabbing and Global Governance". *Rethinking Globalizations*
- MENEZES, Júlia Alves; CONFALONIERI, Ulisses; MADUREIRA, Ana Paula; DUVAL, Isabela de Brito; DOS SANTOS, Rhavena Barbosa; MARGONARI, Carina (2018). "Mapping Human Vulnerability to Climate Change in the Brazilian Amazon: The Construction of a Municipal Vulnerability Index". *PloS One*, 13(2), pp.1-30
- MORAES, Juan A.; BÉJAR, Sergio (2022). "Electoral volatility and political polarization in developing democracies: Evidence from Latin America, 1993–2016". *Party Politics*, pp. 1-12
- MULLER-CREPON, Carl (2022). "Local Ethno-Political Polarization and Election Violence in Majoritarian Vs. Proportional Systems". *Journal of Peace Research*, 59(2), pp. 242–258
- NASSAUER, A. (2018). "Situational Dynamics and the Emergence of Violence in Protests". *Psychology of Violence*, 8 (3), pp. 293-304. doi: 10.1037/vio0000176.
- NATALINI, Davide; JONES, Aled; BRAVO, Giangiacomo (2015). "Quantitative Assessment of Political Fragility Indices and Food Prices as Indicators of Food Riots in Countries". *Sustainability*, 7(4), pp. 4360-385
- NATH, Reshmita; LUAN, Yibo; YANG, Wangming; YANG, Chen; CHEN, Wen; LI, Qian; CUI, Xuefeng (2015). "Changes in arable land demand for food in India and China: A potential threat to food security". *Sustainability* (Basel, Switzerland), 7(5), pp. 5371-5397
- NEWMAN, E. (2020). "Hungry, or hungry for change? Food riots and the political conflict, 2005-2015". *Studies in Conflict & Terrorism*, 43(4), pp.300-324
- OTTO, Ilona M.; RECKIEN, Diana; REYER, Christopher P.O.; MARCUS, Rachel; LE MASSON, Virginie; JONES, Lindsey; NORTON, Andrew; SERDECZNY, Olivia (2017). "Social vulnerability to climate change: A review of concepts and evidence". *Regional Environmental Change*, 17(6), pp.1651-1662.
- PAKES, Francis (2014). "Enter the land-grab riot". IN: (PRITCHARD, David; PAKES, F. Editors) *Riot, Unrest and Protest on the Global Stage*. London: Palgrave Macmillan UK, 2014, pp.262-276
- PALONEN, Emilia (2009). "Political Polarisation and Populism in Contemporary Hungary". *Parliamentary Affairs*, 62(2), pp. 318–334, <https://doi.org/10.1093/pa/gsn048>
- PATEL, R.; MCMICHAEL, P. (2009). "A Political Economy of the Food Riot". *Review* (Fernand Braudel Center), 32(1), pp.9–35. <http://www.jstor.org/stable/40647787>

- PELLING, Mark (1997). "What determines vulnerability to floods; a case study in Georgetown, Guyana". *Environment and Urbanization*, 9(1), April, pp.203-226
- PRINDEX (2020). *Prindex Comparative Report 2020*. <https://www.prindex.net>
- PRITCHARD, David (2014). "Unrest and inequalities: Comparing Welfare States". IN: (PRITCHARD, David; PAKES, F. Editors) *Riot, Unrest and Protest on the Global Stage*. London: Palgrave Macmillan UK, 2014, pp.191-221
- RALEIGH, Clionadh; CHOI, Hyun Jin; KNIVETON, Dominic (2015). "The Devil Is in the Details: An Investigation of the Relationships between Conflict, Food Price and Climate across Africa." *Global Environmental Change*, 32, pp.187-99
- RANALDI, Marco; MILANOVIĆ, Branko (2022). "Capitalist Systems and Income Inequality". *Journal of Comparative Economics*, 50(1), pp. 20-32
- RATIONAL WIKI (2023). "Pink tide in maps". *Rational Wiki*. Last access 01/01/2023. https://rationalwiki.org/wiki/Pink_Tide
- REGUERO, Borja G.; LOSADA, Iñigo J.; DÍAZ-SIMAL, Pedro; MÉNDEZ, Fernando J.; BECK, Michael W. (2015). "Effects of Climate Change on Exposure to Coastal Flooding in Latin America and the Caribbean". *PloS One*, 10(7), pp.1-19
- RICARD, Maria F.; MAYER, Marcos A.; VIGLIZZO, Ernesto F. (2022). "The Impact of Beef and Soybean Protein Demand on Carbon Emissions in Argentina During the First Two Decades of the Twenty-First Century". *Environmental Science and Pollution Research International*, 29(14), pp. 20939-20946
- RODRÍGUEZ-FERNÁNDEZ, Laura; CARVAJAL, Ana Belén Fernández; BUJIDOS-CASADO, María (2020). "Allocation of Greenhouse Gas Emissions Using the Fairness Principle: A Multi-Country Analysis". Switzerland: Basel, *Sustainability*, 12(14), pp. 1-15
- SHERMAN, Mya; FORD, James; LLANOS-CUENTAS, Alejandro; VALDIVIA, María José; BUSSALLEU, Alejandra (2015). "Vulnerability and Adaptive Capacity of Community Food Systems in the Peruvian Amazon: A Case Study from Panaiillo". *Natural Hazards (Dordrecht)* 77(3), pp. 2049-2079
- SMITH, Todd Graham (2014). "Feeding unrest: Disentangling the causal relationship between food price shock and sociopolitical conflict in urban Africa". *Journal of Peace Research*, 51(6), pp.679-695
- THE ECONOMIST (2005). "Down on the farm". *The Economist*. London: The economist newspaper limited. October 24th
- THE LANCET, "Covid-19 in Latin American: A humanitarian crisis" (2020). Editorial: *The Lancet*, 396, November 7th. <https://www.thelancet.com/action/showPdf?pii=S0140-6736%2820%2932328-X>
- THE WORLD BANK (2022). International Bank for Reconstruction and Development, IDA. <https://data.worldbank.org/>

- VETTER, Sylvia H.; SAPKOTA, Tek B.; HILLIER, Jon; STIRLING, Clare M.; MACDIARMID, Jennie I.; ALECSANDROWSKI, Lukasz; GREEN, Rosemary; JOY, Edward J. M.; DANGOUR, Alan D.; SMITH, Pete (2017). "Greenhouse gas emissions from agricultural food production to supply Indian diets: Implications for climate change mitigation". *Agriculture, Ecosystems & Environment*, 237, pp.83-85
- VICINO, Thomas J.; FAHLBERG, Anjali (2017). "The politics of contested urban space: The 2013 protest movement in Brazil". *Journal of Urban Affairs*, 39(7), pp. 1001-1016, DOI: 10.1080/07352166.2017.1323545
- VILLACORTA, Sandra P.; EVANS, Kenneth G.; DE TORRES, Trinidad J.; LLORENTE, Miguel; PRENDES, Nicanor (2018). "Geomorphological evolution of the Rimac river's alluvial fan, Lima, Peru". *Geosciences Journal* (Seoul, Korea), 23(3), pp. 409-24.
- VREELAND, James Raymond (2008). "The Effect of Political Regime on Civil War: Unpacking Anocracy". *The Journal of Conflict Resolution*, 52(3), pp. 401–425.
- WINSEMIUS, Hessel C.; JONGMAN, Brenden; VELDKAMP, Ted I.E.; HALLEGATTE, Stephane; BANGALORE, Mook; WARD, Philip J. (2018). "Disaster Risk, Climate Change, and Poverty: Assessing the Global Exposure of Poor People to Floods and Droughts". Cambridge University Press. *Environment and Development Economics*, 23(3), pp.328-348. ISSN 1355-770X