



CLIMATE-FRAGILITY RISK BRIEF

LATIN AMERICA & THE CARIBBEAN

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Climate-Fragility Risk Brief: Latin America and the Caribbean

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SUMMARY

Climate change is expected to have differential impacts across Latin America and the Caribbean (LAC), a region encompassing ecological systems as varied as the islands of Central America, the Amazon Basin, the Andes and the cerrado, or central savannah plateau. While much of the region has been free from war for decades, conflict and violence are still present in many countries. Colombia and Haiti are post-conflict countries, and LAC as a whole is characterized by exceptionally high rates of violence and murder, mainly driven by the expansion of organized crime and high rates of state violence. In addition, there are long histories of localized conflict around land and natural resources. And the region's high rates of socioeconomic inequality shape how climate affects security in LAC, raising new issues about climate justice and climate-related migration.

While debates about the links between climate change and security in LAC have just begun, the evidence is growing that changing climate patterns are already impacting the region. Rising temperatures and sea levels, eroding shorelines, and hurricanes and other disasters are a threat to the people of LAC today. These climate impacts exacerbate existing socio-economic problems such as inequality, poverty, and a lack of trust in government. Climate change thus acts as a "risk multiplier".

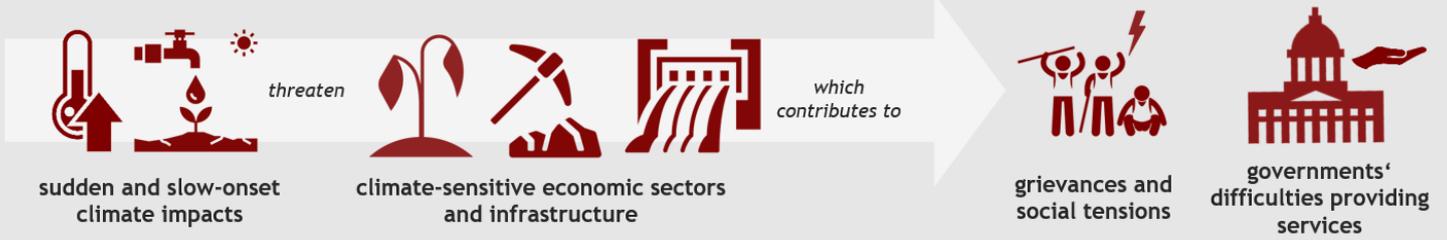
This brief identifies five major climate-fragility risks, i.e. five pathways by which climate impacts undermine security; damage to key infrastructure, especially energy infrastructure, higher tensions around mining and fossil fuel extraction; the encouragement of environmental crime; the destruction of livelihoods, which pushes people to migrate or commit crimes in crowded cities; and higher incidences of disease.

Unfortunately, inertia or paralysis within most of LAC's regional organizations and the growth of climate denialism create additional challenges towards coordinating policies for tackling the climate-security nexus. However, it is possible to find strategic entry points around issues such as disaster risk reduction, water and food security and infrastructure.

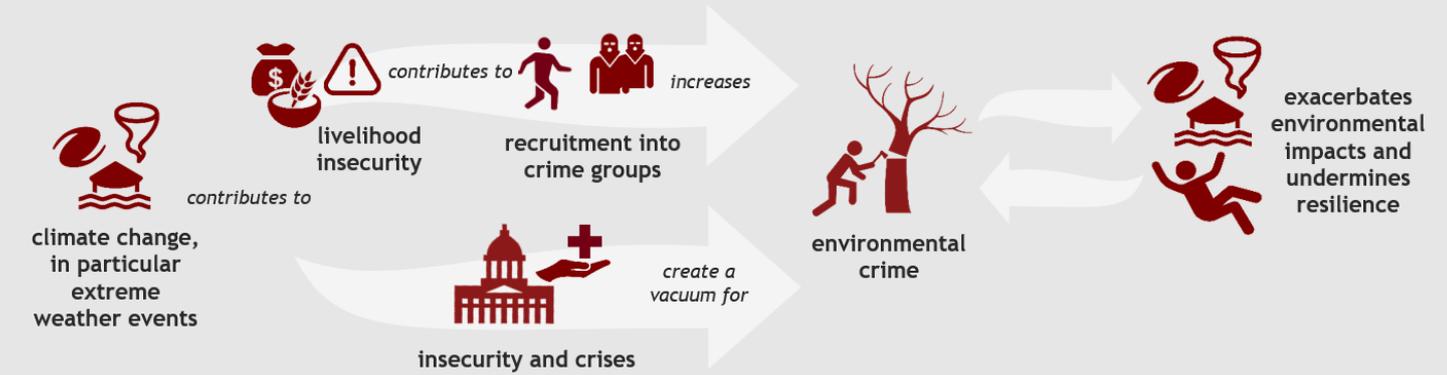
This policy brief draws on the existing research from the region to outline some of those entry points for solutions and analyse the problems that need solving. It examines the relevance of the region's patterns of poverty, inequality, crime and governance to the relationship between climate change and security. The intended audience of this brief encompasses policymakers, researchers, other stakeholders from state bodies, civil society entities, UN and regional bodies, and companies concerned with the impacts of climate change in LAC. The overarching goal of the analysis is to promote further debate of, empirical research on, and policy action around climate change and security in the region.

Climate fragility risks in Latin America and the Caribbean

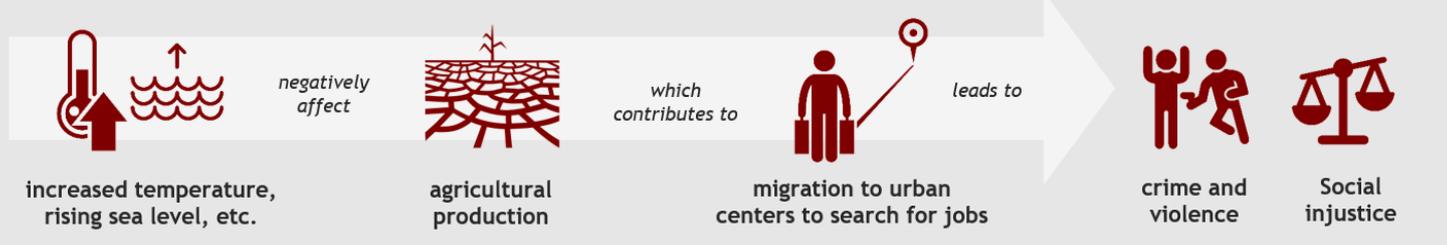
1. Damage to infrastructure and economies exacerbates tensions



2. Climate change and organized and environmental crime



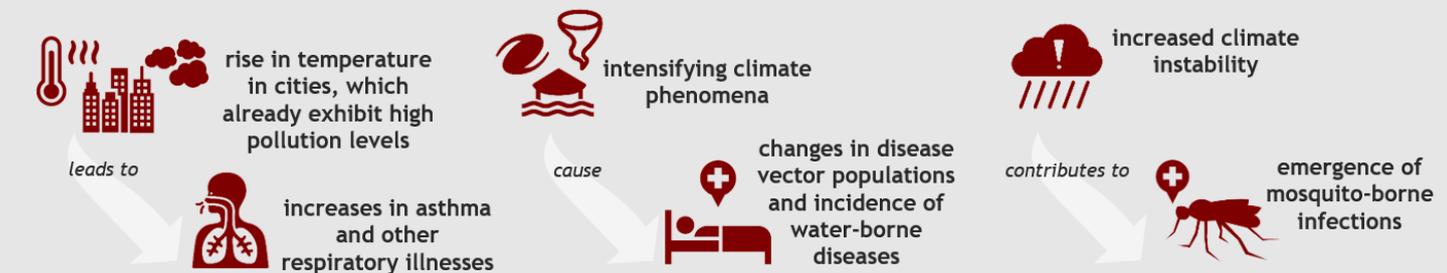
3. Climate change contributing to migration and urban violence



4. The future of extractives in a changing climate



5. Increased spread of disease



SOCIO-ECONOMIC AND POLITICAL CONTEXT

Political Context

At the time of writing, the most pressing issue in Latin America and indeed all over the world is the COVID-19 pandemic. The crisis is straining health systems, increasing government debt, and causing economic chaos around the world. Latin American countries that rely on exports of oil or other commodities, or that have major dollar-denominated debts, are particularly exposed. This is particularly worrisome as political instability has been on the rise, and this crisis might increase existing risks and act as a stress test for the political institutions that have been weakened in many countries across the region in recent years. For instance, the pandemic will also likely exacerbate another pressing issue in the region, the Venezuelan crisis, which has forced hundreds of thousands of people to leave the country as refugees.

These crises are occurring amid the general erosion of democracy in the region. Recent reports suggest that the quality of democracy in LAC has suffered reversals as authoritarian tendencies increase, even if cloaked by democratic institutions and processes (Freedom House, 2018). In addition to undermining participatory processes in ways that leave populations more vulnerable, this trend threatens the integrity of elections. The compromising of electoral processes in the region is particularly concerning due to the widespread use of fake news and bots (Latin America Advisor, 2018). Interference and distortion through social media can help trigger violence, as has happened in Venezuela (Viana 2017).¹

Equally concerning are the growing attacks by right-wing groups and governments on civil society organisations and their representatives, as well as journalists and human rights defenders. Examples include the government's expulsion of human rights organisations in Nicaragua (UN, 2018), violence against media workers in Mexico (Aljazeera, 2019), and accusations by the Brazilian president that NGOs are responsible for setting forest fires in the Amazon (Folha de S. Paulo, 2019). These trends have led to a retreat from the policies geared at social inclusion and welfare that were implemented under more progressive governments, including anti-poverty programs such as tax incentives, conditional cash programs, affirmative action policies, and social pensions (Caggiano Blanco and Berti 2019).

Rising political instability expressed itself in 2019 in a series of massive and often prolonged protests that swept LAC, as citizens took to the streets in the key cities of Ecuador, Peru, Chile, Bolivia, Guatemala, Haiti, Honduras, Venezuela, and Colombia, among others. Although the triggers for these protests varied, one common denominator was deep frustration with corruption, persistent social inequality, and declining quality of life (Schavelzon 2019). In the case of Venezuela and Bolivia, the contested legitimacy of electoral results also weighed heavily. In many of these cases, state forces responded with excessive use of force, and there have been reports of torture and sexual abuse of protesters (Cohen 2019). While in some of those countries the protests built on recent waves of social unrest, elsewhere they were not predicted by most political analysis, reflecting the combustible state of much of the region.

¹ The 2017 Venezuelan protests began after the arrest of multiple opposition leaders and the cancellation of the dialogue between opposition and government. The tensions led to a constitutional crisis and to the dissolving of the opposition-led National Assembly, intensifying protests. Throughout the period, both sides distorted information to vilify the opponent.

Relations among LAC states are also shifting, with conservative governments aligning more closely with the United States and downplaying the importance of South-South and regional cooperation. The current crisis in Venezuela, which has intensified as the power struggle between socialist president Nicolás Maduro and the opposition leader Juan Guaidó drags on, has become a particularly divisive issue within the region. Broadly put, anti-globalism is on the rise; the Union of South American States (UNASUR) is being disbanded and “replaced” with the Forum for the Progress and Development of South America (Prosur), whose founding members share an anti-Maduro (and more broadly, anti-“Communist”) agenda. An anti-environment discourse also seems to have emerged, with Brazilian President Jair Bolsonaro increasingly attacking climate initiatives, including by reneging from hosting COP25 and threatening to withdraw from the Paris Accord. These political changes weaken participatory arrangements, erode cooperation frameworks, and undermine accountability mechanisms that had, to some extent, helped to guarantee rights and to promote greater access to public services and resources. In turn, these exacerbate the region’s vulnerabilities (Contesse 2019). The changing political context in LAC, specifically rising political instability and the weakening of key institutions, may exacerbate the negative impact of climate change on security in the region.

Social and Economic Context

The region’s changing social and economic context is key for understanding conflict and fragility in LAC, in particular the fact that vast portions of the population lack adequate access to income, institutions, and public services. With the exception of Haiti, which the UN classifies as a Least Developed Country (LDC), all LAC states are Middle Income States (MICs). Despite being a diverse group, these states face common challenges including inclusive growth, sustainable development, fighting corruption and tackling organized crime, discrimination and social exclusion. In addition, social exclusion along class, gender, ethnic and racial lines, among other social cleavages, continues to plague the region’s countries—especially because, in LAC, poverty tends to be closely related to discrimination and inequality. In Guatemala, for instance, non-indigenous children are twice as likely to attend school as are their indigenous counterparts (Barragán 2017).

According to the Economic Commission for Latin America (CEPAL), in 2017 poverty remained high (at approximately 29.6% of the population) across the region, while extreme poverty (around 10.2%) had increased to the highest level since 2008 (CEPAL 2017). Although income inequality has fallen since 2000, LAC is still the most unequal region in the world. According to the most recent report of the IACHR, on Poverty and Human Rights, in 2014 in LAC, 10% of the population possessed 71% of the region’s total wealth (IACHR 2017). In recent years, stagnant or slow growth, combined with volatility, has led to a generally upward trend in unemployment, especially among youth (Werner, 2020). If the COVID-19 pandemic causes as much economic damage as expected, poverty and inequality are likely to further increase.

The socio-economic characteristics of Latin American countries vary considerably. Some countries in the region have historically been export-based economies, with agribusiness and mining playing an important role especially in Argentina, Bolivia, Brazil, Chile, Colombia, Peru, and Mexico. Most of the other LAC countries depend heavily on subsistence agriculture. Around 14% of the economically active population across the region works in agriculture, with a much higher proportion in the region’s less developed states (World Bank, 2020), which makes it sharply

vulnerable to shifts in the global price of commodities. Infrastructure remains sub-par as compared with other regions of similar income levels, especially in areas far from major urban centers. Over 60% of LAC's roads remain unpaved, compared with 46% in the MICs of Asia (in Europe, the figure is 17%) (The Economist 2018). Not only do the infrastructure gaps affect access to public services, they also render much of the region's population more vulnerable to disasters.

While the region's population is still comparatively young, population aging has begun to create new pressures on living standards (Figliuoli et al. 2018). Rates of urban primacy in the region are unusually high, with around 80% of the region's populations living in urban areas as of 2014 (Arsht, 2014). However, most city cores are now losing population as people migrate to the outskirts of urban areas or to secondary cities, in part due to rampant violence in major urban centers, but also increasingly because of climate change, especially in places where soil erosion has increased. Rural-to-urban migration continues in areas where unemployment remains high. Latin Americans are also being displaced in massive numbers by factors such as disasters, large-scale infrastructure projects and violence, but most of the region's states do not formally recognize the category of internally displaced persons, making their situation an "invisible crisis" (Folly 2018).

At the same time, the Venezuelan crisis has generated levels of migration not seen in the region since World War II, with over 4.5 million Venezuelans fleeing the country due to violence, insecurity and threats as well as lack of food, medicine and essential services. Hundreds of thousands of Venezuelans are crossing borders to other South American states such as Colombia, Peru, Ecuador, Argentina, Chile and Brazil (UNHCR 2019). In some parts of the region, this has added to local tensions as services and resources are strained and institutions become overwhelmed with the growing demands. The lack of adequate legal frameworks and dedicated institutions exacerbates social tensions in contexts of high and sudden arrivals of migrants, especially in border areas (Collins 2019).

National and Public Security Overview

Most of LAC has long been free from inter-state war. A solid tradition of peaceful resolution of such conflicts has evolved, whether bilaterally, through the use of ad hoc guarantor state groups, or via multilateral mechanisms, including those related to the United Nations (UN) (Treverton 2011). However, both Colombia and Haiti have been marked by open and recurring internal conflicts; Colombia continues to host a UN Security Council-mandated peace operation, while the mission in Haiti, MINUJUSTH, completed its mandate in October 2019.

Many other countries in the region have long histories of localized conflict around land and natural resources, for instance those affecting indigenous people in Brazil, Peru, and Guatemala. Tensions around Venezuela increased significantly in 2019 with US-led threats of military invasion and minor confrontations that broke out along Venezuela's borders with Brazil and Colombia over the distribution of humanitarian aid. Abroad, Nicolás Maduro and Juan Guaidó², the men who both claim leadership of the country, have been backed by rival camps: Maduro is supported by a group that includes Cuba, China, and Russia, while Guaidó has been recognized as Venezuela's Interim President by the US (White House 2019), most

² Nicolás Maduro became Venezuela's president in 2013. Since January 2019, his presidency has been disputed by Juan Guaidó, who has declared himself president with the support of the National Assembly (Corrales, 2019).

of Western Europe and the rest of South America. From the refugee crisis to interstate tensions, the escalating situation in Venezuela shows that internal instability can also have repercussions at a regional level.

Organized crime networks have a strong presence in LAC. These groups engage in a variety of activities including illegal drug trade (especially cocaine), arms trafficking, human trafficking, and a broad range of environmental crimes such as illegal mining and wood extraction. In Colombia, illegal armed groups include leftist guerrilla groups such as the Ejército de Liberación Nacional (ELN), FARC dissidents, and right-wing paramilitary groups, all of which are to some extent involved in organized crime networks (Briscoe and Keseberg 2019). These illegal armed groups contract and expand, and improvements in policies are subject to reversals. For instance, Ecuador, which was mediating the negotiations between the ELN and the FARC, has withdrawn its support for talks after several attacks attributed to the ELN (Reuters 2018). And despite the peace agreement signed in 2016 between the Colombian government and the FARC, one of the guerrilla leaders announced he was taking up arms again in September 2019, arguing that the government was failing to implement its part of the peace accord (Ingber, 2019). Violence against environmental defenders by criminal organizations involved in illegal environmental exploration has also been rising in the region, with the murder of 57 activists in Brazil in 2017 alone (Abdenur 2018).

State violence is also rampant, especially in countries whose public security policies are heavily militarized, such as Mexico (where executions and disappearances have increased drastically), Colombia, Central American states (where crime is exacerbated by the growth of gangs, often with transnational ties), and Brazil. Across the region, the higher the country's murder rate, the greater the overall proportion of killings committed by police (Economist 2017). In the Brazilian state of Rio de Janeiro alone, where many police are involved in influential militias, officers killed 1,810 in 2019—an average of five people a day—as the government pushed to give police even more freedom to use force (Mundo ao Minuto 2020).

In addition, LAC is the world's most violent region in terms of homicides. While LAC is home to just 8% of the world's total population, 33% of all homicides occur there. Of the world's 17 countries with the highest murder rates, 17 are in LAC, as are 43 of the world's 50 most violent cities (Igarapé 2018). These violence rates are related to the spread of organized crime in the region, including trafficking of arms, drugs, people and species, as well as environmental crimes such as illegal mining—which fuel violence, corruption and money laundering. Corruption also continues to be rampant at all levels despite well-publicized efforts to curb practices such as money laundering and bribes to politicians.

LAC's soaring homicide rates figures reflect not only the spread of organized crime, but also the extent of state violence and the low capacity of state institutions to address the root causes of insecurity. Underlying problems such as inequality in the access to land and public services, especially in rural areas, mean that significant population groups, from women and LGBTI to indigenous and Afro-descending communities, remain marginalised from political processes and economic development. As a whole, LAC's deficient public security poses significant challenges to achieving development, security, human rights and climate objectives.

CLIMATE CONTEXT

LAC is no stranger to extreme climatological, hydrological, and meteorological events and climate-induced disasters. According to the Intergovernmental Panel on Climate Change (IPCC), 613 extreme climate and hydro-meteorological events took place between 2000 and 2013 alone (IPCC 2014). These included typhoons and hurricanes, thunderstorms, hailstorms, tornados, avalanches, coastal storm surges, floods, droughts, heatwaves and cold spells. Tropical storms originating in both the Atlantic and the Pacific have devastated parts of Mexico, Central America and the Caribbean. The El Niño phenomenon, which brings heavy rainfall to parts of the region between September and November, and its counterpart La Niña are becoming more severe due to climate change (Leahy 2018). These dynamics have far-reaching implications, including to major cities such as Lima, Quito and São Paulo.

Projections in a “business-as-usual”³ scenario show increasing mean temperatures of between 1 and 4°C levels by the end of this century across LAC (IPCC 2018). Impacts include changes in precipitation patterns, a strong increase in heat extremes, higher drought risks and increasing aridity. The intensity of tropical cyclones and other storms is expected to increase, while sea levels are expected to rise by 0.2 to 1.1 m depending on warming level and region. Researchers are moderately confident that the Amazon basin, northeastern Brazil, Central America, the Caribbean and some parts of Mexico will see increased drought conditions. More frequent extreme droughts in the Amazon may trigger a “tipping point,” increasing the likelihood of an irreversible, large-scale loss of Amazon rainforest cover (Watts 2019).

The IPCC (2018) has warned that rising sea levels threaten the region’s population—much of which lives on coastal areas—by contaminating freshwater aquifers, eroding shorelines, inundating low-lying areas, and increasing the risks of storm surges. In addition, much of the coastal area surrounding the Mesoamerican reef and nearby islands is low-lying and subject to sea level rise as well as ocean acidification. Eroding shorelines have been documented and contribute towards loss of soil productivity, resulting in outmigration (World Bank 2018). The melting of glaciers and drying of lakes in the Andes region, especially in the northern part of the Andes, are documented phenomena and both are expected to intensify, with shrinking runoff to lower-lying lands (Buytaert et al. 2017).

As noted above, Latin American and the Caribbean is a climatically diverse region that will experience a wide range of climate change impacts. Nevertheless, focusing on the Amazon basin, at the heart of the region, gives a good impression of expected climate impacts on the continent. (See figure “Climate projections: Amazon Basin”)

³ The IPCC scenario IS92a is often called the “business-as-usual” scenario because its projections are based on current trends without taking reduction measures or effects into consideration. However, the scenario was developed in the 1990s and its projections are arguably conservative compared to current trends.

Climate projections: Amazon Basin

-  **Projected increase of temperature of 1.7°C to 5.3°C by 2085**
-  **Increased length of dry period and increased drought in the Amazon**
-  **Increase in extreme weather events such as flood, drought, and fires**

Key climate impacts:

Ecosystem

- Change in ecosystem function
- Loss of biodiversity
- Increased risk in fire and invasive species

Water

- Changing river transportation routes
- Decreased water availability
- Decreased fishery yields due to reduced species diversity

Agriculture

- Decreased crop productivity
- Decreased rainfall and increased drought may impact water availability
- Increased competition for land use

Health

- Shifting burden of water and vector borne diseases
- Increased need and cost for alternatives to traditional medicines

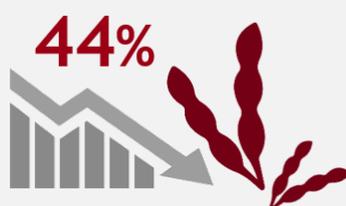
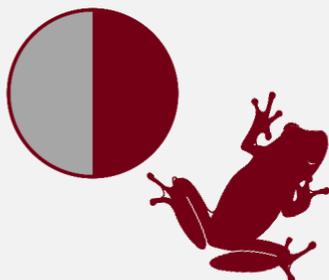
Infrastructure

- Decreased hydropower outputs
- Decreased road access due to flooding

Tourism

- Reduced ecotourism resulting from ecosystem impacts
- Damaged infrastructure

The Amazon is home to roughly **half the world's rainforests** and contains **at least 10% of the world's biodiversity**.



With a **4°C** mean global temperature increase, **soybean production** in the Brazilian Amazon, a major commercial-scale activity in the Amazon, is projected to **decline by 44% by 2050**.



The Amazon plays a central role in regulating rainfall in key agricultural regions across South America by its forests **recycling 50-75% of annual rainfall back into the atmosphere**.

50-75%

This process, if unaffected by deforestation or degradation, puts about **seven trillion tons of water** per year back into the atmosphere.

© adelphi based on USAID 2018

CLIMATE FRAGILITY RISKS

When the impacts of climate change interact with other stresses, the combination can overburden states, contributing to social upheaval, instability or even violent conflict. Climate change thus acts as a “risk multiplier”. In LAC there are five climate-linked sources of potential instability that policymakers should be aware of.

Damage to infrastructure and economies exacerbates tensions

Climate change disrupts economic activity in ways that contribute to instability. This can happen due to more incremental changes, such as loss of soil productivity, or as a result of sudden, extreme weather events, as in the case of hurricanes that destroy tourism infrastructure (Ambrus 2018). When economies are stagnant or shrinking, governments are less able to deliver services to their populations and especially to marginalised groups, which can exacerbate existing grievances, social tensions and conflicts.

Water scarcity and droughts can threaten energy supply in countries that are heavily dependent on hydropower generation; in some countries, they can also disrupt large-scale agricultural production and mining, as happened in Brazil during the 2015 drought (Marengo, Torres and Alves 2016). A climate of extremes also takes a toll on critical infrastructure, particularly in coastal regions (Fay et al. 2017; Hares 2017; Barrett 2019). This includes the (already inadequate and highly concentrated) transport and communications systems that enable the provision of essential public services, interconnect parts of the region and rural populations to urban centers, and enable exchanges with other parts of the world. One ECLAC study estimates that infrastructure damage due to changes in weather patterns will cause annual economic losses in the order of 1.5% to 5% of the region's GDP by 2050 (ECLAC 2014). Since so much of the region's population is concentrated in urban and peri-urban areas, extreme weather events can also easily destroy significant hubs of infrastructure, affecting tens of thousands of people.

Infrastructure damage and economic disruption disproportionately affect already marginalized groups, such as indigenous populations and other traditional communities. At the same time, it can undermine the ability of states to provide public services. Both can exacerbate grievances and anti-state sentiment, which can escalate into political instability (see, for instance, Cepik and Cepik 2019; Closs 2019).

For example, a severe and persistent drought in Venezuela exacerbated social tensions by creating a shortage of water and electricity from hydropower—the impact was particularly severe in 2016, when the government imposed rolling blackouts and water rationing, hammering an already underperforming agricultural sector. These stressors also intensified the refugee movements from Venezuela and to other South American countries. While the crisis in Venezuela is depicted as more of a humanitarian crisis rather than security risk, it may contribute to social tensions when host communities are ill equipped to absorb the influx of newcomers. There has already been a spike in xenophobic attacks and anti-migration protests in Brazilian municipalities near the Venezuelan border (Zerbato 2019).

2016 was also the year that natural disaster once again struck Haiti, in the form of Hurricane Matthew. The disaster affected over 2 million people, primarily in the poorest regions of the country, destroying livelihoods and disrupting agriculture and tourism in a region that relies heavily on those two sectors (World Bank 2017). There were major political impacts: the hurricane hit the island in October 2016, forcing elections scheduled for that month to be postponed until November. Turnout for the November election was very low, with the winning candidate Jovenel Moïse receiving only 600,000 votes in a country of 10 million. As of early 2020, Haiti remains politically deadlocked, with many parliamentarians' terms having expired after the country once again failed to hold elections in October 2019 (France 24 2020). Natural disasters are not the only reason for the impasse, but they make it harder to achieve stability and reach political compromise.

Such disasters carry the potential to cause temporary or long-term breakdown in governance and institutions. This is particularly worrisome in contexts with prevailing social inequality, when vulnerable groups such as women, indigenous, or low-income populations, are disadvantaged or even left out of relief efforts, triggering new grievances or exacerbating existing ones (López-Calva and Juárez 2008), and undermining the legitimacy of governments.

Climate change and organized and environmental crime

Climate change creates a favourable environment for those who commit environmental crimes or belong to criminal organizations. When people have few legal options for making a living and have grievances against the government, they are more likely to join organized criminal groups, whose actions undermine public security. At the same time, environmental crimes can further degrade natural resources and reduce ecosystems' ability to absorb harmful greenhouse gases: They accelerate climate change, therefore exacerbating existing climate-induced fragilities. It is a vicious cycle.

These dynamics often emerge around extreme weather events, a direct threat in and of themselves. When Hurricane Irma hit the Caribbean in August and September 2017, decimating the island of Saint Martin, homes and stores were looted with impunity, because the security forces were focused on saving lives. According to the UNFPA, gender-based violence also tends to increase in LAC in the aftermath of disasters (UNFPA 2010). When the government's ability to provide basic services breaks down after extreme events due to the need to focus on disaster response, organized crime groups find governance vacuums that play into their hands. In 2010, following tropical storm Agatha, the Cachiros crime group monopolized the relief efforts to launder an estimated USD\$6.4 million of illegal earnings (Yancey-Bragg 2017). These risks are not, however, limited to sudden climatic impacts. Slow-onset climate change is likewise fueling organized crime. In Central America, for example, prolonged droughts and the parallel loss of employment and livelihoods is facilitating the recruitment of young men to criminal organizations (Albaladejo and LaSusa 2017). The Amazon rainforest is a hotspot for environmental crimes, such as illegal mining and wood extraction. For example, illegal miners dump mercury in rivers, poisoning water and fish stocks, and cut down forest areas for mineral extraction, while illegal logging expands deforestation and land degradation even further. In addition to rising emission through deforestation this impacts local communities by threatening their livelihoods, exposing them to health hazards and driving displacement (Phillips 2018; Philips 2019).

The complexity of the interactions between environmental crime, armed groups and climate change is also exemplified by the rise of deforestation after the peace deal and demobilisation of the FARC in Colombia. Deforestation increased significantly because the governance vacuum left by the FARC was not filled quickly enough by the state. Armed groups that did not participate in the peace deal together with local governments and residents exploited the situation for their own benefits for example by cutting down forest and converting it to agricultural land (Volckhausen 2017).

Climate change contributing to migration and urban violence

Many of the security repercussions of climate change in Latin America are related to agriculture and food security. Increased temperature, ultraviolet radiation, sea-level rise and changes in pest ecology are just some of the climate change impacts that affect agricultural output in the region. Those who lose agricultural livelihoods may move elsewhere to pursue economic opportunities, either to nearby urban centers or neighboring countries. Urban centres that cannot accommodate the newcomers risk higher levels of urban crime and violence.

According to the IPCC, climate change could especially threaten subsistence farming in socially and environmentally susceptible parts of LAC, such as northeastern Brazil. Decreased yields across several crops in Argentina, Brazil, Chile, Mexico and Uruguay have already been documented, and this trend may intensify in the coming years (IPCC 2014). The World Food Programme has found that drought-related crop failures in Guatemala, El Salvador, Honduras, and Nicaragua are key drivers of migration not only in Central America, but also (although to a much lesser extent) to the United States (Masters 2019).

Most urban centres in LAC are under severe demographic pressure, and their infrastructure cannot cope with the exponential growth in people moving to cities. From 1950 to 2010, the share of Latin Americans living in cities went from 30% to more than 85%. Today, roughly 25% of the region's urban populations lives in slums. (Muggah 2018). LAC is characterized by a number of risk factors that increase the potential for uncontrolled urban growth to translate into more violence and crime, in particular structural inequalities, histories of violence and conflict, youth unemployment, and limited responses of security and justice institutions. Although uncontrolled urbanization is not a new problem for the region, against this backdrop the increasing severity of climate shocks to livelihoods is set to exacerbate LAC's urban crises even further.



The future of extractives in a changing climate

Extractive resources (minerals, oil and gas) are very important for economic development in Latin America. However, there is a long history of conflict around these resources, and these conflicts will most likely get worse as climate change increases pressure on land and water resources and exacerbates the environmental impacts of mining. What's more, countries' efforts to reduce the use of fossil fuels will reduce the revenues that countries can earn from exporting these products, which undermines livelihoods and can increase social tensions, as detailed in the first climate-fragility risk.

The region has a long history of resource-related conflicts affecting indigenous people. Driven by the expansion of mining activities across the continent in particular into ecologically sensitive and indigenous areas, there has been a significant rise in conflicts around extractive resources. Compared to other regions around the world, these conflicts often escalate into violence (Andrews et al. 2016). Conflicts often emerge in peripheral areas around land and water resource use and access, negative environmental and health impacts and benefits sharing—tensions around land concentration in Colombia are a good example (Kleffman and Lema 2019). Climate change may exacerbate these dynamics. It will increase the risks of negative environmental and social impacts of mining, for example by increasing the risks for tailing dams and storage failures through extreme weather events or increasing water scarcity (Rüttinger 2016). The increased impacts of mining will be felt even more acutely as local communities will at the same time have to cope with the increasing impact of climate change on their livelihoods (Auberger 2019).

As awareness about the devastating economic consequences of climate change expands, fossil fuel-dependent countries face further challenges when decarbonizing their economies. Governments must be aware of the possibility of stranded assets⁴ and falling revenues from fossil fuel exports (Ivleva et al. 2018). Efforts to reduce the use of fossil fuels are threatening to the oil sector, not only in established producer countries, such as Brazil, Mexico, and Venezuela, but also in countries that have recently found new reserves and have been betting heavily on fossil fuels, as in the case of Guyana (Maybin 2019). The collapse in the oil price due to the COVID-19 pandemic, while extreme, is a preview of the type of demand shocks exporters should expect as countries take steps to reduce fossil fuel production.

On the other hand, decarbonization will not be the end of mining or resource extraction. Some countries will try to exploit their oil and gas deposits while they still can. And demand for other natural resources, such as minerals and metals used in clean energy technologies such as lithium and copper, will increase and with it the risks of local conflicts around the exploration and extraction of these resources (Dominish 2019).

⁴ Stranded assets are economic assets that lose value much earlier than expected as a result of changes in legislation, market forces, disruptive innovation, societal norms, or environmental shocks (Bos 2019).



Increased spread of disease

Climate change also has consequences for health security in LAC, although the present and projected effects vary across the region. The expected rise in temperature in major cities like Mexico City and Santiago, which already exhibit high pollution levels, may affect human health more intensely, for instance through an increase in asthma and other respiratory illnesses (Moreno 2006). In addition, intensifying climate phenomena such as El Niño and La Niña cause changes in disease vector populations and incidence of water-borne diseases in South America, including malaria (World Health Organization 2016). Studies have shown that increased climate instability has contributed to the emergence of mosquito-borne infections like Dengue, Chikungunya, and Zika. Some global health experts consider outbreaks of such diseases to be a matter of regional or even global security (Gostin and Hodge 2016). Several climate-induced physical and biophysical shifts to the environment impair human livelihoods through, for instance, the contamination of freshwater sources with harmful pathogens (Population Reference Bureau 2007, Bárcena et al. 2018). Hurricane Matthew led to a sharp increase of cholera cases in Haiti (World Bank 2017). With the novel coronavirus pandemic that started in late 2019 and hit the region in 2020, LAC health infrastructures may become more fragile (Winter 2020).

POLICY AND INSTITUTIONAL CONTEXT

How to design and adapt government institutions in charge of the climate agenda has been a central theme in the region's discussions of climate change, especially given the cross-cutting nature of the challenges involved. In individual LAC countries, federal level structures and ministries (typically the Ministry of the Environment or Interior) focus on environmental issues, as well as climate change. Their action is complemented by inter-ministerial commissions and more targeted policy instruments, such as the Action Plan for Prevention and Control of Amazonia (PPCDAm), created in 2004 and coordinated by the Civil House of the Brazilian Presidency until 2013, when it was handed over to the Ministry of the Environment. There are also specialized agencies in each country such as the Brazilian Institute of Environment and Renewable Natural Resources IBAMA, which monitors and combats deforestation and other environmental crimes in the Brazilian territory (Ministério do Meio Ambiente 2020).

In the Amazon, a variety of security forces are involved in monitoring deforestation, such as federal, military and civilian police, but these vary widely across the region both in structure and in division of labor. Some of these monitoring systems draw on advanced technologies such as land cover satellites, and there are cooperation initiatives in the Amazon region for information sharing using this data. These mechanisms detect environmental crimes to some extent, but are hampered by the vastness of the region and, since 2019, government policies meant to weaken monitoring mechanisms (Amaral 2019).

Overall, however, there is a remarkable lack of cooperation within the region on disaster risk reduction, including as it relates to sea level rise--with the exception of the Caribbean island states. The Caribbean Disaster Emergency Management Agency (CDEMA) is an inter-regional supportive network of independent emergency units throughout the Caribbean region. CDEMA is one of the region's few bodies that explicitly recognize the links between climate change, development and security, focusing on resilience-building by multiple stakeholders. In December 2018, for instance, CDEMA held a panel discussion on "The Big Question: What are the Actions Required for a Resilient and Secure Caribbean?" that included discussion of how climate change contributes towards trans-regional criminal flows and other security challenges (CDEMA 2018).

The Amazon Cooperation Treaty Organization (known as OTCA) - formed by the states that share the Amazon territory: Brazil, Bolivia, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela - presents itself as a "social and environmental bloc." As part of its Strategic Agenda for Amazon Cooperation, the organization has a regional programme on climate change, as well as strategic objectives related to infrastructure and transport, indigenous issues, and regional health (OTCA 2017). This framework makes occasional references to food and health security (see, for instance, p. 34), but it focuses on individual issues without linking climate and security. More broadly, most of OTCA's member states have historically promoted strong discourses of national sovereignty, which has posed hurdles to the development of concrete cooperation initiatives on climate change despite the organization's involvement in specific areas, such as forest cover monitoring (OTCA 2017).

There is little awareness within the region of the linkages between climate and security, as evidenced by the incipient state of research and policy debates focusing on the topic (for a counterargument, see Abdenur, Kuele and Amorim

2019). Instead, frameworks and institutions within the region tackle climate change through instruments such as National Adaptation Plans and national laws, versus security initiatives through public security and national defense institutions. Regional mechanisms such as Mercosur, Organization of American States (OAS), Union of South American States (UNASUR), Alianza del Pacifico and Community of Latin American and Caribbean States (CELAC) are either more focused on economic cooperation or paralyzed by political disputes, and the Amazon Cooperation Treaty Organization (ATCO) lacks the political will of its member states to promote effective cooperation along this front despite growing awareness of climate-related risks. The strong focus on economy is, however, not always a challenge to climate mitigation and is often a driver for action: as a leading sector in the region, agriculture has been a target of several climate mitigation plans throughout LAC, ranging from adaptation plans to preparedness for extreme climatic events to strategies for low-carbon farming (Le Coq et. Al, 2019). Another area targeted by mitigation policies is forest and land management. In the context of the Bonn Challenge⁵, several LAC countries have planned and implemented reforestation and restoration projects (Romjin et al. 2019).

Another challenge in the design of institutions capable of tackling climate change challenges in LAC is that there is a significant gap in the implementation of policies. A 2012 report by the Latin American Platform on Climate (LAPC) assessing the state of climate policies in the agricultural and forestry sectors in LAC found major implementation gaps for climate policies and programs in all ten countries studied (LAPC 2012). In the absence or inadequacy of climate policy accountability mechanisms or agencies with the power to conduct policy reviews and issue reports, implementation is likely to remain a key challenge. This scenario is particularly acute where financial and organizational resources are scarce. Yet another challenge lies in gaps in within-government coordination; more often than not, individual ministries work with inadequate coordination across the system. There is also wide disparity among states in highly decentralized government structures.

While donors have been trying to promote more effective adaptation and mitigation strategies in LAC, in parts of the region they face not only limited capacity but also political resistance, as reflected in the weakening of the Amazon Fund (which drew on resources from Norway and Germany) in Brazil (Boffey 2019).

ENTRY POINTS FOR ADDRESSING CLIMATE-FRAGILITY RISKS

LAC states have taken some steps to address climate impacts and risks, whether through significant commitments to reduce emissions (as in the cases of Brazil, Mexico, Peru and Colombia) or by efforts to curb deforestation. These efforts, however, are subject to political reversals, as observed in Brazil and Colombia. Other countries, including Chile, Costa Rica, Nicaragua, Peru and Uruguay are investing heavily in renewable energy and its associated technologies. A number of countries, whether individually and through cooperative arrangements, have boosted their disaster risk management capacity, especially in the Caribbean.

⁵ The Bonn Challenge is an initiative of the German government and the International Union for Conservation of Nature (IUCN) aiming to bring 350 million hectares of the world's deforested and degraded lands into restoration by 2030. See: www.bonnchallenge.org.

From a policy perspective, stakeholders have begun to focus more on assessing the projected impacts of climate change across critical sectors of the economy, and on promoting environmental laws, urban innovation, and environmental protection programs. Despite support from organizations such as UN Environment and the European Union, including in the direction of greater regional climate cooperation, more robust capacity in assessment, planning and response design are needed to address the projected impacts of climate change, including as they relate to security.

The general lack of awareness about the links between climate change and security means that few, if any, targeted policies and instruments exist in the region.

However, there are some topics that are important to actors at different institutional and policy levels—and of different political persuasions. Focusing on these topics can create buy in and encourage cooperation to address climate-fragility risks:

- **Disaster Risk Reduction (DRR):** because discussions linking climate change and security are more common in this area, under the broad umbrella of resilience, structures such as CDEMA in the Caribbean, the Regional Center for Disaster Information for Latin America and the Caribbean (CRID), and CELAC- which has developed a DRR strategy focusing on the agricultural sector and food and nutrition security. These can serve as strategic platforms for starting the discussion and promoting cooperation around the topic. It may be easier to initially foster cooperation around DRR because of how sensitive climate change discussions have become in certain countries. However, it is important to broaden the discussion to address other aspects of climate and security, including how slower phenomenon (such as gradual soil erosion) impact livelihoods.
- **Environmental Crimes:** there is a consolidated research and policy literature on environmental crimes, including illegal deforestation, fauna and flora extraction, pollution and contamination, and illegal mining. Some of these discussions draw links between these activities and security outcomes, including the incidence of violent crime, sexual exploitation and human trafficking. At the national level, institutional structures dealing with environmental crime (for instance, deforestation monitoring agencies and law enforcement units that work on environmental crime) thus constitute another entry point for drawing clear linkages between climate change and security. Multilateral mechanisms for international cooperation on environmental crime are practically non-existent, but regional platforms such as the Police Community of the Americas (Ameripol) and OTCA may provide space for regional cooperation on these issues. In addition, bilateral cooperation can be strengthened around the tasks of prevention and dismantling of criminal networks carrying out environmental crimes.
- **Migration and Displacement:** for rural populations and all those depending on the balance of the elements of nature, climate change is not a slow onset problem, but an immediate survival risk. The 2019 mass migration from Central America towards the US was sparked by large-scale crop failures over a prolonged period, coupled with the loss of land and assets due to sea-level rise (Bassetti 2019). On a national level, the failure to guarantee livelihoods is an aggravating factor behind fast urbanization trends and associated pressures, including urban criminality. Technical,

educational and financial support towards the restoration of degrading lands, the implementation and maintenance of sustainable food production systems and natural conservation can help alleviate these trends.

- **Urban Resilience:** fostering resilience to climate shocks in urban centers is a crucial security strategy. High population density and multiple dependence on infrastructures and supply chains for all basic services make urban centers dangerously exposed to extreme weather events, as well as increased criminality in a scenario of food and resource shortages. Investing in additional hybrid and decentralized energy sources, creating strategically located green oases that absorb floods and contain fires, and creating emergency plans for catastrophic scenarios are some examples of how to make cities more resistant to climate and less vulnerable to social chaos in light of extreme climate events.

Who should act? Even if certain national governments or environment ministries are reluctant to address climate-security issues, there are a range of actors, both at the UN and subnational levels, that can step up and improve climate security:

The range of relevant actors include not only the UN system, but also a range of regional, national and subnational actors:

- **UN actors:** Countries hosting UN missions, whether political or peace operations, provide opportunities to engage more closely with climate and security, in part because the UN system is becoming more attuned to these linkages after several UN Security Council resolutions were passed and the Secretary General has made several efforts to highlight the theme in his speeches. PDAs are also strategically located due to their straddling the peace and development concerns at the heart of the UN's preventive vision. PDAs are currently deployed to the Caribbean, El Salvador, Guatemala, Guyana/Suriname, Honduras and Venezuela. Throughout the region the UN system should incorporate climate and security risk assessment into United Nations Sustainable Development Cooperation Framework (formerly called United Nations Development Assistance Frameworks) and other planning instruments. The UN Climate and Security Mechanisms should also consider testing its new tools through a case study in the region.
- **Subnational governments:** The region's largest economy, Brazil, is currently under a far-right government that has often issued climate-skeptic declarations, while other LAC states either have or may emerge as potential "champions" of the discussion. Especially the Dominican Republic—which has organized a debate on climate and security during its UN Security Council presidency—and any UN member states that have joined the Friends of the Climate and Security Mechanisms. Even in states with climate-denying governments, such as Brazil, subnational governments have worked individually or collectively on climate issues. For instance, governors from states in the Brazilian Amazon have formed a coalition to seek solutions for deforestation and other climate-related issues, bypassing the federal government (Vick 2019).
- **Civil society:** Champions are also found within the region's vast and varied ecosystem of civil society entities, from universities and research centers to think tanks and non-governmental organizations (NGOs). In

addition to bringing attention to the links between climate change and security, these champions can promote effective policy in this area by promoting exchanges on possible solutions and best practices. In some instances, they have also formed coalitions with research centers and private sector entities in order to push for advances on the climate agenda (see, for instance, Coalizão Brasil 2020). These innovative, cross-sectoral arrangements may prove essential in identifying common ground among disparate actors in a region already reeling from the impacts of climate and security.



REFERENCES

- Abdenur, Adriana Erthal 2018: Environmental Rights: Threats to Activists in Brazil. Retrieved from <https://www.climate-diplomacy.org/news/environmental-rights-threats-activists-brazil>.
- Abdenur, Adriana Erthal, Giovanna Kuele and Alice Amorim (eds) 2019: Climate and Security in Latin America. Rio de Janeiro: Igarapé Institute/Climate and Society Institute.
- Albaladejo, Angelika and Mike LaSusa 2017: The Perfect Storm: How Climate Change Exacerbates Crime and Insecurity in LatAm. In: Insight Crime. Retrieved from <https://www.insightcrime.org/news/analysis/perfect-storm-climate-change-exacerbates-crime-insecurity-latin-america-caribbean/>.
- Aljazeera 2019: 3 journalists killed in Mexico in less than a week. Retrieved from https://www.aljazeera.com/news/2019/08/journalists-killed-mexico-week-190803144957086.html?utm_source=website&utm_medium=article_page&utm_campaign=read_more_links.
- Alvim, Diego 2017: Prejuízo do Cavex com tempestade chega a US\$ 9 milhões. In: O Vale. Retrieved from https://www.ovale.com.br/_conteudo/2017/10/nossa_regiao/22037-prejuizo-do-cavex-com-tempestade-chega-a-us-9-milhoes.html.
- Amaral, Ana Carolina 2019: Decisões da gestão Bolsonaro fragilizam controle ambiental. In: Folha de São Paulo. Retrieved from <https://www1.folha.uol.com.br/ambiente/2019/08/decisoes-da-gestao-bolsonaro-fragilizam-controle-ambiental.shtml>.
- Ambrus, Steven 2018: Facing climate change's threat to Caribbean tourism. Inter-American Development Bank. Retrieved from <https://blogs.iadb.org/ideas-matter/en/facing-climate-changes-threat-to-caribbean-tourism/>.
- Andrews, Tony; Bernarda Elizalde, Philippe Le Billion, Hoon Oh Chang, David Reyes, and Ian Thomson 2016: The Rise in Conflict Associated with Mining Operations: What Lies Beneath? CIRDI. Retrieved from: <https://cirdi.ca/wp-content/uploads/2017/06/Conflict-Full-Layout-060817.pdf>.
- Arsht, Adrienne 2014: Urbanization in Latin America. Washington, DC: Atlantic Council. Retrieved from https://www.atlanticcouncil.org/wp-content/uploads/2014/02/20140205_LatAm_UrbanizationTwoPager.pdf.
- Auberger, Andreas; Pia van Ackern, Timon Leopold, Lukas Rüttinger and Regine Vogt 2019: Addressing climate change impacts on mining. Umweltbundesamt. Retrieved from: https://www.umweltbundesamt.de/sites/default/files/medien/421/dokumente/klimress_workingpaper_igf-agm2019.pdf.
- Bárcena, Alicia; Mario Cimoli, Joseluis Samaniego and Ricardo Pérez 2018: Economics of Climate Change in Latin America and the Caribbean. Santiago: CEPAL. Retrieved from https://repositorio.cepal.org/bitstream/handle/11362/43889/1/S1800475_en.pdf.
- Barragán, Maryluz 2017: Poverty, inequality and discrimination in Latin America. In: Dejusticia. Retrieved from <https://www.dejusticia.org/en/column/poverty-inequality-discrimination-latin-america/>.
- Barrett, Oliver 2019: How Climate Change Risks Magnify Economic and Security Vulnerabilities Case Study: Venezuela and its Neighbors. In: Abdenur, Adriana Erthal, Giovanna Kuele and Alice Amorim (eds) 2019. Climate and Security in Latin America, pp 13-26. Rio de Janeiro: Igarapé Institute/Climate and Society Institute.
- Bassetti, Francesco 2019: Environmental Migrants: Up to 1 billion by 2050. Retrieved from <https://www.climateforesight.eu/migrations/environmental-migrants-up-to-1-billion-by-2050/>.
- Boffey, Daniel 2019: Norway halts Amazon fund donation in dispute with Brazil. In: The Guardian. Retrieved from <https://www.theguardian.com/world/2019/aug/16/norway-halts-amazon-fund-donation-dispute-brazil-deforestation-jair-bolsonaro>.

- Bos, Kyra and Joyeeta Gupta 2019: Stranded assets and stranded resources: Implications for climate change mitigation and global sustainable development. Science Direct. Retrieved from: <https://www.sciencedirect.com/science/article/pii/S2214629618305383>
- Briscoe, Ivan and David Keseberg 2019: Only Connect: the Survival and Spread of Organized Crime in Latin America. PRISM Journal, National Defense University. Retrieved from <https://cco.ndu.edu/News/Article/1767435/only-connect-the-survival-and-spread-of-organized-crime-in-latin-america/>.
- Buytaert, Wouter; Simon Moulds, Luis Acosta, Bert De Bièvre, Carlos Olmos, Marcos Villacis, Carolina Tovar and Koen M J Verbist 2017: Glacial melt content of water use in the tropical Andes. Environmental Research Letters 12:11. Retrieved 02.03.2020 from <https://iopscience.iop.org/article/10.1088/1748-9326/aa926c>.
- Caggiano Blanco, R. C. H.; Berti, N. T. 2019: Right-Wing Populism in Latin America: Self-Interest over Social Welfare. Global Dialogue, 9(1), pp. 47-49.
- Casey, Nicholas 2016: Climate Change Claims a Lake, and an Identity. In: The New York Times. Retrieved from: <https://www.nytimes.com/interactive/2016/07/07/world/americas/bolivia-climate-change-lake-poopo.html>.
- CDEMA 2018: The big question: what are the actions required for a resilient and secure Caribbean?. In: St Lucia News Online. Retrieved from <https://www.stlucianewsonline.com/the-big-question-what-are-the-actions-required-for-a-resilient-and-secure-caribbean/>.
- CEPAL 2014: La economía del cambio climático en América Latina y el Caribe: paradojas y desafíos. Retrieved from <https://www.cepal.org/es/publicaciones/37471-la-economia-cambio-climatico-america-latina-caribe-paradojas-desafios-sintesis>.
- CEPAL 2017: Social Panorama of Latin America. Retrieved from https://repositorio.cepal.org/bitstream/handle/11362/42717/6/S1800001_en.pdf.
- Cepik, Marco and Hanna Machando Cepik 2019: Climate change and security in the Amazon: vulnerability and risks for indigenous peoples on the Acre-Ucayali border. In: Abdenur, Adriana Erthal, Giovanna Kuele and Alice Amorim (eds) 2019 Climate and Security in Latin America, pp. 77-90. Rio de Janeiro: Igarapé Institute/Climate and Society Institute.
- Closs, Marilia 2019: Climate change, social conflict and the complexification of crime in Bolivia: an analysis of the impact of floods and storms in Chapare as coca growing region. In: Abdenur, Adriana Erthal, Giovanna Kuele and Alice Amorim (eds) 2019. Climate and Security in Latin America, pp. 41-53. Rio de Janeiro: Igarapé Institute/Climate and Society Institute.
- Coalizão Brasil 2020: Cima, Florestas e Agricultura. Retrieved from <http://www.coalizaobr.com.br/home/>.
- Cohen, Sandra 2019: Uso excessivo da força policial, o elo entre os protestos na América Latina. In: O Globo. Retrieved from <https://g1.globo.com/mundo/blog/sandra-cohen/post/2019/11/29/uso-excessivo-da-forca-policial-o-elo-entre-os-protestos-na-america-latina.ghtml>.
- Collins, Joshua 2019: Mapped: The Venezuelan diaspora and growing emigration challenges. In: The New Humanitarian. Retrieved from <https://www.thenewhumanitarian.org/news/2019/11/21/Venezuela-migrants-visa-restrictions-Colombia>.
- Contesse, Jorge 2019: Conservative Governments and Latin America's Human Rights Landscape. Retrieved from <https://ssrn.com/abstract=3486444>.
- Corrales, Javier 2019: How to Tackle Venezuela's Military Problem. In: NY Times. Retrieved from <https://www.nytimes.com/2019/03/04/opinion/venezuela-military-maduro-guaido.html>.
- Dominish, E., Florin, N. and Teske, S., 2019: Responsible Minerals Sourcing for Renewable Energy. Report prepared for Earthworks by the Institute for Sustainable Futures, University of Technology Sydney. Retrieved from: <https://www.uts.edu.au/sites/default/files/2019->

[04/ISFEarthworks_Responsible%20minerals%20sourcing%20for%20renewable%20energy_Executive%20summary.pdf](#).

The Economist 2017: Murderous Latin American police need to start policing themselves. Retrieved from <https://www.economist.com/the-americas/2017/10/26/murderous-latin-american-police-need-to-start-policing-themselves>.

The Economist 2018: Latin America needs an infrastructure upgrade. Retrieved from <https://www.economist.com/the-americas/2018/03/10/latin-america-needs-an-infrastructure-upgrade>.

Fargo, Jason; Viscidi, Lisa 2015: Local Conflicts and Natural Resources: A Balancing Act for Latin American countries. The Dialogue. Retrieved from <https://www.thedialogue.org/analysis/local-conflicts-natural-resources-in-latin-america/>

Fay, Marianne; Luis Alberto Andres, Charles Fox, Ulf Narloch and Michael Slawson 2017: Rethinking Infrastructure in Latin America and the Caribbean: Spending Better to Achieve More. Washington, DC: The World Bank.

Fay, Marianne; Laderchi, Caterina R. 2005: Urban poverty in Latin America and the Caribbean: Setting the stage. In: The Urban Poor in Latin America. Washington, DC: The World Bank.

Figliuoli, Lorenzo, Valentina Flamini, Frederic Lambert and Rosalind Mowatt 2018: Is Latin America prepared for an aging population? International Monetary Fund View & Commentaries. Retrieved from <https://www.imf.org/en/News/Articles/2018/12/11/blog-is-latin-america-prepared-for-an-aging-population>.

Folha de S. Paulo 2019: Bolsonaro Claims Amazon Fires Could Have Been Caused by NGOs. Retrieved from <https://www1.folha.uol.com.br/internacional/en/scienceandhealth/2019/08/bolsonaro-claims-amazon-fires-could-have-been-caused-by-ngos.shtml>.

Folly, Maiara 2018: Migrantes invisíveis: a crise de deslocamento forçado no Brasil. Igarapé Institute Strategic Note 29. Retrieved from <https://igarape.org.br/wp-content/uploads/2018/03/Migrantes-invis%C3%A9veis.pdf>.

France 24 2020: Political crisis in Haiti could lead to president ruling single-handedly. Retrieved from <https://www.france24.com/en/20200114-political-crisis-in-haiti-could-result-in-president-ruling-single-handedly>

Freedom House 2018: Freedom in the World 2018: Democracy in Crisis. Retrieved from <https://freedomhouse.org/report/freedom-world/freedom-world-2018>.

Gostin, Lawrence O. and James G.Hodge 2016: Zika virus and global health security. In: The Lancet Infectious Diseases 16(10). Retrieved from [https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(16\)30332-2/fulltext](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(16)30332-2/fulltext).

Hinsdale, Heremy 2018: Vanishing Glaciers: The Future of Water in Peru's High Andes. State of the Planet. Earth Institute. Retrieved from <https://blogs.ei.columbia.edu/2018/06/12/vanishing-glaciers-future-water-perus-high-andes/>.

Igarapé Institute 2018: Citizen security in Latin America: Facts and Figures. Strategic Paper 33. Retrieved from <https://igarape.org.br/wp-content/uploads/2018/04/Citizen-Security-in-Latin-America-Facts-and-Figures.pdf>.

IACHR 2017: Pobreza y derechos humanos. Inter-American Commission on Human Rights. Retrieved from <https://www.oas.org/es/cidh/informes/pdfs/PobrezaDDHH2017.pdf>.

Ingber, Sasha 2019: Former FARC Leaders Announce 'New Stage Of Fighting,' Upending Colombia's Peace Deal. Retrieved from <https://www.npr.org/2019/08/29/755425619/former-farc-leaders-announce-new-stage-of-fighting-upending-colombia-s-peace-dea?t=1583346730512>.

- IPCC 2014: Central and South America. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1499-1566. Retrieved from https://www.ipcc.ch/site/assets/uploads/2018/02/WGIAR5-Chap27_FINAL.pdf.
- IPCC 2018: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press. Retrieved from https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_Low_Res.pdf.
- Ivleva, Daria; Tim Schlösser, Christine Scholl, Kim Schultze and Stephan Wolters 2017: From Riches to Rags? Stranded Assets and the Governance Implications for the Fossil Fuel Sector. Bonn/Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Retrieved from <https://www.adelphi.de/en/system/files/mediathek/bilder/From%20Riches%20to%20Rags%20-%20Stranded%20Assets%20and%20the%20Governance%20Implications%20for%20the%20Fossil%20Fuel%20Sector%20-%20GIZ%20adelphi.pdf>.
- Iza, Alejandro; Juan C. Sanchez and Matt Hulse 2014: Managing transboundary rivers in Latin America - could a global convention help? IUCN Environmental Law Centre. Retrieved from https://www.iucn.org/sites/dev/files/managing_transboundary_rivers_in_latina_america_-_final_english.pdf.
- Kleffman, Johanna and Sebastian Lema 2019: Linking climate change and peacebuilding in Colombia through land access. Climate Diplomacy. Retrieved from: <https://www.climate-diplomacy.org/news/linking-climate-change-and-peacebuilding-colombia-through-land-access>
- LAPC 2012: Challenges for a climate compatible development: how to strengthen agricultural, livestock and forestry public policies. Retrieved from <https://www.eldis.org/document/A65517>.
- Latin America Advisor 2018: How much is fake news influencing Latin elections? Retrieved from <https://www.thedialogue.org/analysis/how-much-is-fake-news-influencing-latin-elections/>.
- Leahy, Stephen 2018: 2019 may be the hottest year yet--here's why. In: National Geographic, 6. Retrieved from <https://www.nationalgeographic.com/environment/2018/12/2019-may-be-hottest-year-yet-el-nino-climate-change/>.
- Le Coq, Jean-François; Eric Sabourin, Carolina Milhorange, Fanny Howland et al. 2019: Comparative dynamics of integration of climate change issue in policies for agricultural sector in Latin America and Caribe. CGIAR. Retrieved from <http://agritrop.cirad.fr/593751/1/Poster%20CSA%20Le%20Coq%20et%20al%20-%20comparison%20V03.pdf>.
- López-Calva, Luis F. and Juárez, Eduardo Ortiz 2008: Evidence and Policy Lessons on the Link between Disaster Risk and Poverty in Latin America: Summary of Regional Studies. UNDP Regional Bureau for Latin America and the Caribbean. Retrieved from <https://www.preventionweb.net/english/hyogo/gar/background-papers/documents/Chap3/LAC-overview/LAC-Oveview.pdf>.
- Marengo, Jose A., Roger Rodrigues Torres and Lincoln Muniz Alves 2016: Drought in Northeast Brazil-- past, present, and future. In: Theoretical and Applied Climatology. Retrieved from <http://danida.vnu.edu.vn/cpis/files/Refs/Drought/Drought%20in%20Northeast%20Brazil%E2%80%94past,%20present,%20and%20future.pdf>.
- Masters, Jeff 2019: Fifth Straight Year of Central American Drought Helping Drive Migration. Scientific American. Retrieved from <https://blogs.scientificamerican.com/eye-of-the-storm/fifth-straight-year-of-central-american-drought-helping-drive-migration/>.

- Maybin, Simon 2019: Will Guyana soon be the richest country in the world? BBC News. Retrieved from <https://www.bbc.com/news/world-latin-america-48185246>.
- Menéndez, Carmen 2019: AMLO y Alberto Fernández, el eje de izquierdas se construye en México. Euronews. Retrieved from <https://es.euronews.com/2019/11/05/amlo-y-alberto-fernandez-el-eje-de-izquierdas-se-construye-en-mexico>.
- Ministério do Meio Ambiente 2020: Plano de Ação para Prevenção e Controle do Desmatamento na Amazônia Legal. Retrieved from <https://www.mma.gov.br/informma/item/616-preven%C3%A7%C3%A3o-e-controle-do-desmatamento-na-amaz%C3%B4nia>.
- Moreno, Ana Rosa 2006: Climate change and human health in Latin America: drivers, effects, and policies. *Regional Environmental Change* 6, pp. 157-164. Retrieved from <https://link.springer.com/article/10.1007/s10113-006-0015-z>.
- Muggah, Robert 2018: Latin America's cities are ready to take off. But their infrastructure is failing them. World Economic Forum. Retrieved from <https://www.weforum.org/agenda/2018/06/latin-america-cities-urbanization-infrastructure-failing-robert-muggah/>
- Mundo ao Minuto 2020: Polícia do Rio de Janeiro matou 1.810 pessoas em 2019. Retrieved from <https://www.noticiasao minuto.com/mundo/1398946/policia-do-rio-de-janeiro-matou-1810-pessoas-em-2019>.
- OTCA 2010: Agenda Estratégica de Cooperación Amazónica. Retrieved from <http://www.otca-oficial.info/library/details/3f>.
- OTCA 2017: Projeto de Monitoramento da Cobertura Florestal. Retrieved from <http://www.otca-oficial.info/projects/details/12>.
- Phillips, Dom 2018: Illegal mining in Amazon rainforest has become an 'epidemic'. In: The Guardian. Retrieved from: <https://www.theguardian.com/world/2018/dec/10/illegal-mining-in-brazils-rainforests-has-become-an-epidemic>.
- Phillips, Dom 2019: Amazon deforestation is driven by criminal networks, report finds. The Guardian, 17 September 2019, <https://www.theguardian.com/environment/2019/sep/16/amazon-deforestation-brazil-crime-report-human-rights-watch>.
- Population Reference Bureau 2007: The Impact of Climate Change on Water, Sanitation, and Diarrheal Diseases in Latin America and the Caribbean. Retrieved from <https://www.prb.org/climatechangeinlatinamerica/>.
- Reuters 2018: Ecuador pulls support for talks between Colombia, ELN, new venue sought. Retrieved from <https://www.reuters.com/article/us-ecuador-colombia-rebels/ecuador-pulls-support-for-talks-between-colombia-eln-new-venue-sought-idUSKBN1HP2VP>.
- Romijn, E.; R. Coppus, V. De Sy, M. Herold, R. M. Roman-Cuesta and L. Verchot 2019: Land Restoration in Latin America and the Caribbean: An Overview of Recent, Ongoing and Planned Restoration Initiatives and Their Potential for Climate Change Mitigation. In: *Forests* 2019, 10, 510.
- Rüttinger, Lukas; Christine Scholl, Pia van Ackern, Glenn Corder, Artem Golev and Thomas Baumgartl 2018: KlimRes - Impacts of climate change on mining, related environmental risks and raw material supply: Case studies on copper and lithium mining in Chile. Berlin: Umweltbundesamt.
- Rüttinger, Lukas and Vigya Sharma 2016: Climate Change and Mining. A Foreign Policy Perspective. Berlin: adelphi.
- Schavelzon, Salvador 2019: A razão das ruas e o impasse na América Latina. In: El País. Retrieved from <https://brasil.elpais.com/opiniao/2019-12-07/a-razao-das-ruas-e-o-impasse-na-america-latina.html>.

- Simon, Roberto 2019: The Changing Face of Anti-Corruption Protests in Latin America. In: Americas Quarterly. Retrieved from: <https://www.americasquarterly.org/content/changing-face-anti-corruption-protests-latin-america>.
- Treverton, Gregory F. 2011: Interstate Conflict in Latin America. In: Security and Defense. Retrieved from <https://www.wilsoncenter.org/publication/154-interstate-conflict-latin-america>.
- UN 2018: Nicaragua: UN rights chief 'alarmed' by imminent expulsion of key human rights groups. Retrieved from <https://news.un.org/en/story/2018/12/1029111>.
- UNFPA 2010: Gender-based and natural disasters in Latin America and the Caribbean. In: Natural disasters, Gender-based violence scenarios. Retrieved from <https://lac.unfpa.org/sites/default/files/pub-pdf/UNFPA%20version%20ingles%201.pdf>.
- UNHCR 2019: Venezuela situation. Retrieved from <https://www.unhcr.org/venezuela-emergency.html>.
- USAID 2018: Climate Risk Profile Amazon Basin. Retrieved from https://www.climatelinks.org/sites/default/files/asset/document/S.AmericaRegional_CRP_Final.pdf.
- Viana, Natalia 2017: Fake News is threatening democracy in Venezuela. In: Publica. Retrieved from <https://apublica.org/2017/06/fake-news-is-threatening-democracy-in-venezuela/>.
- Volckhausen, Taran 2017: Colombia Faces Soaring Deforestation Following FARC Guerrilla Demobilization. Earth Island Journal. Retrieved from: https://www.earthisland.org/journal/index.php/articles/entry/colombia_faces_soaring_deforestation_farc_guerrilla_demobilization/.
- Vick, Mariana 2019: Como o Brasil se apresentou na COP-25. E qual foi a repercussão. In: Nexo. Retrieved from <https://www.nexojournal.com.br/expresso/2019/12/12/Como-o-Brasil-se-apresentou-na-COP-25.-E-qual-foi-a-repercuss%C3%A3o>.
- Watts, Jonathan 2019: Data confirms fears that Jair Bolsonaro's policy encourages illegal logging in Brazil. In: The Guardian. Retrieved from <https://www.theguardian.com/world/2019/jul/25/amazonian-rainforest-near-unrecoverable-tipping-point>.
- Werner, Alejandro 2020: Outlook for Latin America and the Caribbean: New Challenges to Growth. IMF Blog. Retrieved from <https://blogs.imf.org/2020/01/29/outlook-for-latin-america-and-the-caribbean-new-challenges-to-growth/>.
- White House 2019: Statement from President Donald J. Trump Recognizing Venezuelan National Assembly President Juan Guaido as the Interim President of Venezuela. Retrieved from <https://www.whitehouse.gov/briefings-statements/statement-president-donald-j-trump-recognizing-venezuelan-national-assembly-president-juan-guaido-interim-president-venezuela/>.
- Winter, Brian 2020: Coronavirus and Latin America: 4 Possible Outcomes. In: Americas Quarterly. Retrieved from <https://www.americasquarterly.org/content/coronavirus-and-latin-america-4-possible-outcomes>.
- World Bank 2017: Shaking up economic progress: Aggregate shocks in Latin America and the Caribbean. Washington: World Bank Group. Retrieved from <https://openknowledge.worldbank.org/bitstream/handle/10986/28892/121664-WP-Final-Report-Aggregate-Shocks-and-Economic-Progress-English-web.pdf>.
- World Bank 2017: Rapidly Assessing the Impact of Hurricane Matthew in Haiti. Washington: World Bank Group. Retrieved from <https://www.worldbank.org/en/results/2017/10/20/rapidly-assessing-the-impact-of-hurricane-matthew-in-haiti>.
- World Bank 2018: Internal Climate Migration in Latin America. Groundswell Policy Note 3. Retrieved from <http://documents.worldbank.org/curated/en/983921522304806221/pdf/124724-BRI-PUBLIC-NEWSERIES-Groundswell-note-PN3.pdf>.

World Bank 2020: CGIAR research program on Climate Change, Agriculture and Food Security. Washington, D.C: The World Bank Group. Retrieved from <https://ccafs.cgiar.org/publications/climate-smart-agriculture-country-profiles-latin-america-and-caribbean#.XKeHopgzaUk>. (accessed on 3 March 2020)

World Health Organization 2016: El Niño and Health. Global Overview. Retrieved from https://www.who.int/hac/crises/el-nino/flyer_21jan2016.pdf.

World Politics Review 2020: After the End of the 'Pink Tide,' What's Next for South America? 12 February 2020, <https://www.worldpoliticsreview.com/insights/27904/after-the-end-of-the-pink-tide-what-s-next-for-south-america>.

Yancey-Bragg, D'Dea Akei 2017: Honduran Gang Used Tropical Storm Agatha To Launder Millions Of Drug Money. Organized Crime and Corruption Reporting Project, 30 March 2017, <https://www.occrp.org/en/daily/6268-honduran-gang-used-tropical-storm-agatha-to-launder-millions-of-drug-money>.

Zerbato, Diego 2019: Refugiados venezuelanos são alvo de ataques e de xenofobia na Colômbia. Folha de São Paulo, 4 February 2019, <https://www1.folha.uol.com.br/mundo/2019/02/refugiados-venezuelanos-sao-alvo-de-ataques-e-de-xenofobia-na-colombia.shtml>.