

Climate Security Nexus in Latin America and the Caribbean: Venezuela and Colombia

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Summary

The climate crisis is having a significant detrimental influence on livelihoods in developing countries. Climate variability and extremes can negatively impact climate-sensitive sectors such as agriculture and livestock which are a considerable source of employment and a key contributor to economic growth in developing countries (Burke, Hsiang, and Miguel 2015; Dell, Jones, and Olken 2014; 2012). The intensification of the climate crisis poses a threat to efforts aimed to eliminate poverty and food security which, in turn, can threaten peace (United Nations 2020). Despite not being the main or the only cause, there is growing evidence of the importance of food insecurity in sparking and sustaining civil and communal conflicts (FAO 2016).

Latin America and the Caribbean is particularly vulnerable to extreme weather events and climate variability as it is not only highly exposed to both slow and rapid onset events but also has a low coping capacity and a considerable dependence on climate-sensitive sectors (Abdenur, Kuele and Amorim 2019). LAC is also considered one of the most violence-affected regions in the world with presence of different types of conflicts that undermine efforts to eliminate poverty and food insecurity while also undermining capacity of states, communities and individuals to cope with the effects of the climate crisis.

Venezuela and Colombia are two paradigmatic examples of countries that suffer from different types of violence and insecurity while also being highly exposed and vulnerable to climate variability and extremes. Venezuela is undergoing one of the worst humanitarian and migrant crisis in the world. More than 5 million Venezuelans have fled to other countries in LAC while 9 million people remain food insecure in the country. Colombia is a key actor that bridges South America with Central America whose location is highly relevant for human mobility and migration routes along the American continent, including the recent influx of 1.7 million Venezuelan migrants. Both countries are particularly vulnerable to the climate crisis which is likely to adversely impact land, water, and food systems, exacerbating existing vulnerabilities as well as the overall instability and insecurity.

Using Impact Pathway Analysis, we attempted to identify, describe, and represent complex and non-linear interactions between climate, conflict, and existing vulnerabilities and risks that are present in both countries. By doing so we aim to inform academics, practitioners, donors, investors, national and international policymakers about a complicated and heterogeneous reality, to help develop more tailored responses targeting regions and communities most at risk. We conclude the paper highlighting some key messages and potential entry points, including the potential of CGIAR contributions on land, water, and food systems to address conflict and security risks through evidence-based environmental, political, and socio-economic solutions.

1. Climate Security in LAC

The climate crisis is having a significant detrimental influence on livelihoods in developing countries. Climate variability and extremes can negatively impact climate-sensitive sectors such as agriculture and livestock which are a considerable source of employment and a key contributor to economic growth in developing countries (Burke, Hsiang, and Miguel 2015; Dell, Jones, and Olken 2014; 2012). The intensification of the climate crisis poses a threat to efforts aimed to eliminate poverty and food security which, in turn, can threaten peace (United Nations 2020). Despite not being the main or the only cause, there is growing evidence of the importance of food insecurity in sparking and sustaining civil and communal conflicts (FAO 2016). Food price increases, which often push many vulnerable households into food insecurity, have been empirically associated with social unrest and can act as a catalyst for instability and even conflict when interacting with local socio-economic and political vulnerabilities.

Some regions of the world are also particularly prone to extreme weather events and climate variability. This is the case of LAC, a highly diverse region with a wide range of ecosystems that is considerably vulnerable to the changing climate (Abdenur, Institute and Rüttinger 2020; Brácena et al. 2016; Abdenur, Kuele and Amorim 2019). LAC is not only highly exposed to climate variability and extremes but it also has a low coping capacity and a considerable dependence on climate-sensitive sectors (Abdenur, Kuele and Amorim 2019).

While most of the countries in LAC suffered from civil wars and armed insurgencies in the second half of the 20th century, nowadays the type of violence present in region is mainly characterised by organized crime and high rates of state violence (Abdenur, Institute and Rüttinger, 2020). Despite not having many remaining full-fledged armed conflicts, the region suffers from high homicide rates. Some countries in LAC such as Honduras, Nicaragua, or Venezuela are ranked at the bottom of the Global Peace Index despite not being at war (Institute of Economics & Peace 2021). Additionally, the region has also witnessed various conflicts over natural resources (Ross, 2013; Abdenur, Institute and Rüttinger, 2020). In particular, issues revolving around the access and use of land have been present for decades and have been at the heart of several conflicts and post-conflict situations including Colombia and El Salvador.

2. Impact Pathway Analysis for LAC: Venezuela and Colombia

2.1. Objective and research questions

The Impact Pathway Analysis (IPA) aims to identify, describe, and represent the complex and non-linear interactions between climate, conflict, and existing vulnerabilities and risks with a special focus on food, land, and water systems. In particular, the IPA intends to address the following questions:

- What are the potential climate security pathways through which climate may act as a threat multiplier?
- Which specific vulnerabilities and risks, that are at the heart of insecurity and conflict, may be exacerbated by the climate crisis?
- How can dimensions such as natural resources, livelihoods, mobility, governance and food, land, and water systems, inform climate security pathways in specific contexts?

2.2. Methods and data

The IPA follows a systematic literature search and review to find, collate, analyse and synthesize insights from relevant knowledge products, including reports, policy briefs, fact sheets from grey literature, as well as books, journal articles, and other sources of documented evidence in academic literature and public media. The construction of a narrative is then followed by consultation with a designated set of experts and stakeholders through interviews and written feedback to gather evaluation and incorporate suggested revisions.

2.3. Justification

The idea that climate change can exacerbate existing social, economic, political and environmental vulnerabilities and have an impact on security was first recognised by the UN Security Council in its 2009 report “Climate change and its possible security implications”. The UN Security Council acknowledged that climate change can act as a “threat multiplier”, aggravating certain stresses, vulnerabilities, and risks that are often at the heart of conflicts and have a direct impact on national and human security such as poverty, weak institutions, inadequate access to information or resources and high unemployment (UN Secretary-General 2009). However, there is still a lack of evidence and consensus on the causal pathways and mechanisms through which climate can impact socio-economic and political elements such as state capacity, migration, or food systems. It is therefore primordial to look at context-specific cases to try to unveil the geographical hotspots and causal pathways through which climate change and variability may contribute to conflict. This effort is essential in order to inform academics, practitioners, donors, investors, national and international policymakers about a complicated and heterogeneous reality and help them to develop more tailored responses that target those regions and communities most at risk and in need of urgent help.

Colombia is a highly diverse country with a large range of ecosystems and considerable biodiversity that plays a vital role in combating climate change (The World Bank Group 2021). Its geographical location makes Colombia a unique location that bridges South America with Central America, connecting the Central American Dry Corridor with the Andes and the Amazonas. This particular location makes has important implications for human mobility and migration routes along the American continent that are becoming increasingly important due to increasing instability as well as the aggravation of the climate crisis. Colombia is also highly dependent on climate-sensitive sectors such as agriculture, livestock, fisheries, mining, and tourism which makes it particularly vulnerable to the climate crisis, especially considering the wide array of socio-economic and political vulnerabilities that it suffers, including the most unequal land distribution in Latin America and the recent influx of 1.7 million Venezuelan migrants (Guereña 2016; WFP 2020).

The current humanitarian crisis in Venezuela, triggered by a disputed presidency and collapse of the oil-based economy, has left more than 5 million Venezuelans fleeing to other LAC countries due to threats of violence and insecurities related to food, health, and essential services (Collins 2019, Corrales 2019, Abdenur and Rüttinger 2020). The exposure and vulnerability to climate variability and extremes has the potential to aggravate insecurity and migration dynamics. The country’s relatively lower overall vulnerability score in ND-GAIN index is accompanied by low readiness, which can then compound fragility, especially in sectors like food and health (University of Notre Dame 2019). Venezuela has experienced severe and persistent drought over the last decade, along with flooding, increasing rainfall variability and accelerated loss and retreat of glaciers in the Venezuelan Andes due to warming (Chemnick 2019, Braun and Bezada 2013). Projected climate impacts are predicted to impact crop suitability and production, threatening an already alarming crisis that has left around 9 million people food insecure (Congressional Research Service 2021; World Bank 2021).

3. How does climate exacerbate root causes of conflict in Venezuela and Colombia?

These impacts of the climate crisis on existing socio-economic, political, and environmental vulnerabilities could exacerbate existing risks and tensions and contribute to instability and insecurity in Venezuela and Colombia through multiple pathways.

3.1. Venezuela

The current humanitarian crisis in Venezuela has been triggered by a disputed presidency and collapse of the oil-based economy. With more than 5 million Venezuelans fleeing to other LAC countries due to threats of violence and insecurities related to food, health, and essential services, this urgently calls for adopting a climate security lens (Collins 2019, Corrales 2019, Abdenur and Rüttinger 2020). This lens can be used to examine potential pathways of Venezuela's climate security nexus (Figure 1) where climate may act as a "threat multiplier" exacerbating conditions of insecurity and fragility, through complex interactions with environmental, socio-economic, and political factors.

As home to 6% of the Amazon rainforest, one of the most crucial carbon sinks in the world, Venezuela's humanitarian crisis and political economic instability could arguably have a devastating environmental footprint (Burelli 2021). Adverse effect of activities like resource extraction and mining on the environment can translate to harmful consequences for lives and livelihoods dependent on natural resources like trees, water, and fish. Loss and damage to this precious ecological reservoir from deforestation and forest degradation could cast a long shadow over climatic conditions of the region, with harmful feedback effects through carbon emissions (Pacheco-Angulo et al 2017).

Venezuela's weak environmental institutions, augmented by the restructuring and transition of the Ministry of Environment into the Ministry of Ecosocialism under the Maduro regime, have not been able to address and regulate deforestation caused by illicit logging activities. Illegal logging has become a source of firewood and alternative livelihood for many in the country, and a source of profit for corrupt officials, leading to further neglect of environmental laws and institutions (Burelli 2021). While on the one hand there is lack of effective implementation of environmental policies, on the other, communities dependent on natural resources for their livelihood and culture tend to be held responsible for the loss of forests. For instance, traditional fire use and management practices for subsistence activities by indigenous communities like the Pemón in Canaima National Park area have been misunderstood as the leading cause of forest loss. This has resulted in conflict between the Pemón people and government agencies, with the latter adopting a conservation strategy like fire exclusion (Bilbao et al 2010).

Although the country's vulnerability to flooding and rainfall variability is well-documented, Venezuela has also experienced a severe and persistent drought over the last decade, along with accelerated loss and retreat of glaciers in the Venezuelan Andes due to warming (Chemnick 2019, Braun and Bezada 2013). Effect and frequency of droughts have been linked to ENSO events, with serious consequences like loss of mangroves along the Caribbean coast of Venezuela (Barreto 2008). Further, projected retreat of the last remaining Humboldt glacier comes with dire implications for downstream ecology and water cycle in glacier-fed river basins (World Bank 2021).

The country's relatively lower overall vulnerability score in ND-GAIN index is accompanied by low readiness, which can then compound fragility, especially in sectors like food and health (University of Notre Dame 2019). A recent estimate by the World Food Program (WFP) finds around 9 million Venezuelans to be facing food insecurity (Congressional Research Service 2021). Projected climate impacts on agriculture, livestock, and fisheries are predicted to threaten food security, with factors

like rainfall extremes, increasing temperatures, flood, drought, and heat stress adversely affecting crop suitability and production (World Bank 2021). While prior to the pandemic, the country was witnessing protests due to grievances against the government's inability to deliver basic services, criticisms of the government's inadequate COVID-19 response have been met with arrests and human rights violations of migrant workers, healthcare workers, and humanitarian actors (Harrison and Kristensen 2021).

Pathway #1: Livelihood insecurity, environmental degradation, and weak state capacity pathway

This pathway describes the overall countrywide crisis, with specific focus on some parts of the country. Although the role played by the recent drought and rainfall anomalies in amplifying the ongoing economic and political crisis in Venezuela needs more scrutiny, the subsequent shortages and rationing of water and electricity due to heavy reliance on hydropower affected agricultural sector, and exacerbated social tensions, revealing inadequate capacity of the state to respond to drought (Chemnick 2019, Abdenur and Rüttinger 2020).

More than 70% of Venezuela's rural population lives in poverty, with small-holder farmers largely dependent on rain-fed agriculture. This makes their livelihoods vulnerable to impacts of climate variability (World Bank 2009). With the discovery of vast oil reserves, contribution of agriculture to the economy was reduced. This was further reflected in weak agricultural policies of the government, along with collapse of agricultural credit institutions, which, together with rising costs of inputs left farmers without adequate support and incentive (World Bank 2009). Inability of the state to meet needs of farmers as the only farm supplier via the nationalized Agropatria further weakened the agricultural sector, crippling agrarian economy of states like Portuguesa, the country's breadbasket (Watson 2017). While private companies provide agricultural insurance, lack of government support for agricultural credit and insurance markets can compound effects of climate related risks. Decline in agricultural production and agribusinesses can be further connected to rise in food imports and the phenomenon of rural-urban migration (Watters 2021). Destruction of market mechanism through expropriation of millions of hectares of agricultural lands, and industrial plants for coffee, dairy, cement, steel, as well as banks, along with foreign exchange shortage and debt accumulation have reportedly contributed to the government's inability to address insecurities around water, health, and electricity (Walsh 2019).

Worsening livelihood and food insecurity due to adverse impact of climate on agriculture, as well as the vacuum left by lack of state support and weak institutional capacity, can contribute to risks of tensions and political unrest. Decreasing annual rainfall over the last decade can be linked with growing water and energy insecurity, as Venezuela is heavily dependent on hydropower (Chemnick 2019). With drier winters and lower water availability affecting productivity of the Guri Dam, rationing of water and electricity by the state has led to widespread power outages in Caracas and other areas. These shortages augmented the economic meltdown, further impacting agricultural sector and climate-sensitive livelihoods through water scarcity (Chemnick 2019). Weak coping capacity to respond to energy shortages, despite having been an oil-rich "petro-state" (Walsh 2019), can seriously undermine Venezuela's path to recovery from the ongoing crisis.

Furthermore, environmental degradation due to resource extraction in fragile ecosystems can have severe ramifications like biodiversity loss and contamination of water and food, fueling grievances of local communities. Lake Maracaibo, an estuarine lake in northwestern Venezuela, has been a site of thousands of oil spills over the last decade. Between 2010 and 2016, more than 46,000 spills have been traced to the state oil company Petroleos de Venezuela (PDVSA) (Paúl 2021). With continuous leakages from oil wells severely affecting the lake's ecosystem, the surface is said to resemble a "permanent black tide." Pollution of the lake is adversely impacting local fishing communities, through

smaller catches, contaminated fish, skin disease, and equipment damage (Paúl 2021). Efforts for conservation have not been effective under the Maduro regime (Burelli 2021). This situation can escalate a vicious cycle of livelihood and food insecurity, especially in light of the economic meltdown, decline in oil prices, hyperinflation, corruption, and failing capacity of the state to ensure human security for all. This can then have serious implications for climate related security risks in a country becoming increasingly reliant on foreign aid while dealing with sanctions, a situation worsened by the COVID-19 pandemic and lack of trust in the government (Congressional Research Service 2021).

Pathway #2: Resource extraction and competition pathway in Southern Venezuela

While more attention has been usually given to the northern part of the country because of its vast oil reserves, this pathway focuses on southern Venezuela, specifically the mineral-rich region south of the Orinoco River (Burelli 2020). Prompted by the collapse of the oil-based economy and the claim of having the second largest gold reserves in the world, the Maduro regime decreed this area as the “Orinoco Mining Arc” in 2016, thereby opening up this biodiversity rich Amazonian region to extraction of minerals (including gold, diamonds, coltan, and rare earth metals such as uranium, nickel, and titanium) (Ebus 2019a, Burelli 2020). This policy has resulted in increasing environmental degradation through deforestation, sedimentation, mercury poisoning of rivers, and desertification of vast areas of Amazon, along with spread of diseases such as malaria. Sediments from mines can be further damaging to existing infrastructure, such as hydropower turbines at the Guri dam, the hydropower facility that serves as a major source of electricity for the country (Burelli 2020).

This large-scale environmental destruction can be linked to the ongoing crisis in the region, involving massive human rights violations, lawlessness, and loss of sovereignty over a vast swath of the territory (Ebus 2019a). Mining in the region, a key source of revenue for the Maduro regime, has become a fertile ground for organized crime and a parallel economy based on gold, with involvement of both state and non-state actors, including the National Liberation Army (ELN) and the Revolutionary Armed Forces of Colombia (FARC) dissidents who operate in the region by embedding themselves in the local community, and through volatile alliance with the state military who profit from the mining (Ebus 2019a, Ebus 2019b, Burelli 2020).

Insecurity risks in the region are largely related to the countrywide economic collapse and hyperinflation, and associated decline in employment and income, which then drive local communities to move to this area in search of alternative livelihoods. They then mainly get involved in illegal mining and criminal activities, with the likelihood to join non-state armed groups for survival. Uncontrolled resource extraction in lands that traditionally belonged to indigenous groups can be connected to forced displacement of populations, and related dismantling of indigenous social structures. This can then lead to further compounding of risks of violence for local people in the south, already suffering from epidemic and food shortages, through prevalence of channels for human trafficking, slave labor and child labor (Burelli 2020). Violent clashes between armed groups are a regular feature in these parts, with local crime syndicates, called *sindicatos* engaging in violent clashes with the Colombian guerrilla groups and army over the control of mines (Ebus 2019a).

Furthermore, with revenues from resource extraction serving as capital for corrupt political elites, revenues through taxes become undervalued, thereby widening the rupture between the government and local people in this region (Ebus 2019a). Therefore, in the absence of good governance and lack of effective institutions for conflict resolution, impact of climate variability would be likely to exacerbate risks of violence and insecurity.

Pathway #3: Transboundary dynamics pathway

The economic meltdown brought on by declining oil prices, hyperinflation, and lack of access to public goods and services including water, electricity, and healthcare, together with the political turmoil around the disputed presidency, have created a humanitarian crisis, resulting in mass exodus of over 5 million Venezuelans fleeing this repressive regime, and moving to other Latin American countries (Chemnick 2019, Abdenur and Rüttinger 2020, Human Rights Watch 2021). Officials under the Maduro regime have been indicted by the US for engaging in narcotrafficking, corruption, and human rights abuses, reportedly deriving their income from the inflow of currency through drug trafficking. While foreign interventions through oil sanctions hurt the legitimate economy, criminal accomplices of the regime are said to benefit from extortion of remittances sent by Venezuelan migrants across the international border (Ellis 2020).

Many of these migrants are crossing the border to neighboring Colombia. For example, in oil producing Zulia state in north-western Venezuela, people are escaping to the Colombian side of the border, driven by hunger, poverty, violence, and inflated costs of basic services. However, instead of finding sanctuary on the other side of the border, distressed migrants (many with serious health conditions) struggle to survive without adequate food, water, and basic services like healthcare (Ebus 2020).

The influx of these refugees may put a strain on resources in the receiving areas, and possibly contribute to tensions with the host community. Without adequate livelihood support, refugees can become even more vulnerable to insecurity risks by finding employment through organized crime channels that flourish in the border area due to absence of cooperation by security forces. Additionally, there have been reports of sexual and gender-based violence at border checkpoints (Ebus 2020). Furthermore, risks of violence confronting migrants, refugees, and residents in the borderland area can come from violent clashes between the indigenous Wayuu community and *narcos* and guerrillas wanting to control the border (Ebus 2020).

COVID-19 further compounded precarity of the migrants, heightening their exposure to the virus in the context of lack of access to water, sanitation, and shelter. Xenophobic sentiments against displaced Venezuelans, especially those evicted and homeless, can magnify their exposure to insecurity and violence, with women forming a significant proportion of this group, and youth not in education system at the risk of being recruited by criminal organizations and armed groups (UNHCR 2021). Such situations can then lead to the possibility of COVID-induced return of migrants from neighboring countries, with associated risks of contagion from being detained for “quarantine” under crowded conditions (Ellis 2020).

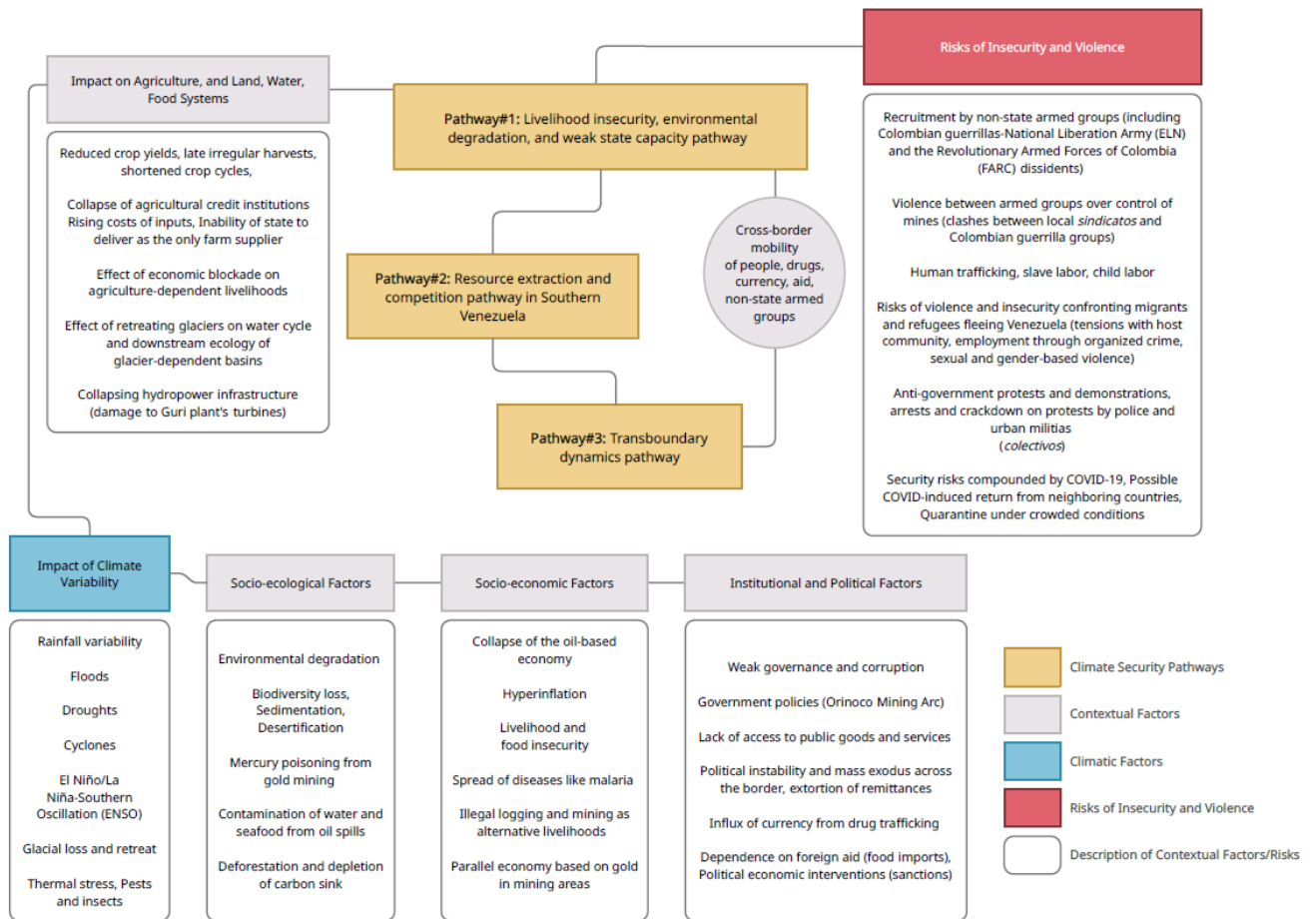


Figure 1: Climate Security Pathways for Venezuela

3.2. Colombia

Colombia is a highly diverse country with a large range of ecosystems and considerable biodiversity¹ and water resources (The World Bank Group 2021). The country is highly vulnerable to climate change and variability, frequently suffering from extreme weather events such as droughts and floods. Temperatures are projected to continue rising between 2 and 4°C for the period to 2041/2070, potentially impacting water and land resources. Small-scale farmers are especially vulnerable because of their high dependency on rain-fed agriculture and their limited adapting capacity (The World Bank Group 2021; Colombian Government 2010). Rainfall variability is also likely to increase with a significant regional disparity –more rainfall in the Amazon basin and the coastal areas, and less rainfall in the highlands (The World Bank Group 2021). These changes in climate are likely to severely impact Colombia’s economy and society which is notably dependent on climate-sensitive sectors such as agriculture, livestock, fisheries, mining, and tourism. Climate variability will particularly affect rural population and contribute to migration and internal displacement as well as hinder poverty reduction strategies, increasing the vulnerability of the most marginalised populations (PNUD 2011).

At the same time Colombia suffers from many vulnerabilities, inequalities, and risks, some of which are both a cause and a consequence of the ongoing armed conflict. Unequal access to land has been

¹ Colombia is considered the second most biodiverse country in the world after Brazil.

at the heart of the conflict, including the preceding era of *La Violencia*, the civil unrest and the emergence of armed groups. The post-colonial governments continued with the Spanish legacy of high concentration of land and extended practices of land dispossession through violent means that severely undermined the livelihood of rural citizens (Pons-Vignon and Solignac Lecomte 2004; Thomson 2011). In fact, Colombia has the most unequal land distribution in Latin America with more than two thirds of the agricultural land concentrated in only 0,4% of the farmland holdings. In contrast, 84% of smallholder farmers controlled just 4% of the land (Guereña 2016).

To counter the growing influence of the guerrilla groups and strengthen their power, big landowners created paramilitary self-defense groups which continued evicting farmers from their lands, taking advantage of the widespread absence of formal land titles which facilitated the expulsion of farmers from their lands (Guereña 2016). This dynamic, which continued throughout the 20th and 21st centuries, has recently been progressively linked to the expansion of the agribusiness and mining industry (Guereña 2016). Likewise, the growing violence, the eviction of farmers from their and the increasing presence of paramilitary groups has been also linked to the drug trade which boosted in the 1980s. In fact, drug cartels and paramilitary groups invested a considerable amount of their profits in acquiring land, using it for livestock and oil palm plantations. These groups currently own around 5 million hectares of land which accounts for 15% of Colombia's territory (Guereña 2016). Land acquisition has been the easiest way of money laundering as the land is a low taxed asset that can be easily purchased with a scarce government surveillance (USAID 2013; IDEAM et al. 2017). The land accumulation process shows how land in Colombia has been often regarded as a wealth accumulation mechanism rather than a productive mean to produce value (IDEAM et al. 2017). Such incredibly high concentration of land has been found to be detrimental for economic growth as well as a driving force for deforestation and a root cause of climate change (Lema and Kleffmann, 2019). Likewise, the use of land in Colombia shows an important imbalance between agriculture and livestock. The number of hectares devoted to livestock, which is generally characterised by a low productivity, has increased at the expense of agricultural land and forests. This evinces the excessive use of land for the livestock industry and the underused potential of the agricultural sector that uses only 24% of the farmland (IDEAM et al. 2017).

Despite considerable progress in the last two decades, Colombia still has a 35.7% national poverty rate while also having a 52% food insecurity rate that has increased last year following the loss of employment and income caused by the COVID-19 pandemic (WFP 2020; World Bank 2021). The long-lasting armed conflict, the arrival of 1.7 million Venezuelan migrants as well as the occurrence of extreme weather events have adversely impacted livelihoods and undermined food security (WFP 2020). In total, the armed conflict in Colombia has led to the internal displacement of more than 8 million people, curtailing their resilience and the capacity to cope with the effects of the climate crisis (ACNUR 2011; Contreras and Contreras 2016). The conflict has also had severe consequences for the environment. Actions taken by non-state armed groups (NSAGs) such as illegal mining and deforestation, the contamination of aqueducts and the explosion of oil pipelines have severely damaged ecosystems (Gutiérrez, Canal, and Ávila 2018).

In this context, there are multiple pathways through which the climate crisis could act as a threat multiplier in Colombia, exacerbating pre-existing socio-economic, political and environmental vulnerabilities that are at the heart of conflict and security risks (Figure 2).

Pathway #1: Water availability, livelihood insecurity and conflict in La Guajira

La Guajira is a department of the Caribe region located in the northeast of Colombia, near the border with Venezuela. La Guajira is the most arid region in Colombia with less than 500mm annual rainfall and one of the most affected by the climate crisis (IDEAM et al. 2017; AREMCA and Corpoguajira 2018).

It suffers from extreme events such as droughts, floods and hurricanes as well as La Niña and El Niño phenomena (ELC La Guajira 2020; AREMCA and Corpoguajira 2018). The existing conditions characterised by high levels of desertification and salinisation complicate agriculture and livestock activities. Only 2% of the land is considered suitable for agriculture and 2% suitable for livestock, compared to the average national levels -19 and 13% respectively (Bonet-Morón and Hahn-De-Castro 2017). During the last three decades there has been a rise of 0.7°C in average temperatures as well as an increase in rainfall variability (AREMCA and Corpoguajira 2018). This trend is likely to continue in the future with increases in average temperatures between 0.95 and 0.15% by 2040 and of 2.3°C by the end of the century as well as a decline in annual rainfall between 14 and 16% by 2040 (IDEAM et al. 2015; AREMCA and Corpoguajira 2018). Without the adequate mitigation and adaptation actions, these changes in climate may exacerbate existing socio-economic and political vulnerabilities, and potentially lead to an increase in tensions and conflict.

The department suffers from a series of socio-economic and political vulnerabilities, including its economic isolation from the rest of the country as well as the prevalence of rural and highly disperse population which increases the difficulties and costs of public service provision (Bonet-Morón and Hahn-De-Castro 2017). Despite not being the most important region of drug trafficking in Colombia, its coastal territory has been used by many mafias and armed groups for exporting drugs and importing weapons and chemical supplies (Trejos Rosero 2017). The territory has suffered from the violence exerted by paramilitary groups - Clan del Golfo and Los Pachencas- and guerrillas –ELN and FARC-EP- as well as organised crime but also intra-communal violence (Trejos Rosero 2017; PNUD 2019).

La Guajira, which shares a border with Venezuela, has been heavily affected by the humanitarian crisis that the neighboring country suffers since 2015 and it currently hosts around 150,000 Venezuelan migrants (GIFMM La Guajira 2020). The region has strong commercial ties with bordering Venezuelan regions -including fuel contraband-, reason why it has suffered the consequences of Venezuela's economic and political crisis (Bonet-Morón, Riccuilli-Marín, and Peña 2021; Ebus 2020). For instance, there has been a steep decline in remittances coming from Venezuela which has severely affected people's income as well as the department's tax collection (Bonet-Morón and Hahn-De-Castro 2017). Corruption is also a core problem that has hindered efforts to address some of the existing vulnerabilities, reason why the national government decided to intervene in the provision of public services such as education, healthcare and water management in 2017 (Bonet-Morón and Hahn-De-Castro 2017; HRW 2020).

La Guajira is the department with the highest poverty rate (66.3%) and one of the highest food insecurity rates (59.1%) in Colombia (DANE 2021; WFP and ICBF 2008). The vulnerability of the children is particularly alarming with 27,9% of the children suffering from chronic malnutrition as well as significant rates of stunted growth, anemia and protein deficiency (AREMCA and Corpoguajira 2018; WFP and ICBF 2008). Despite the overall reduction in the last five years in the infant mortality rate of Colombia, La Guajira has witnessed an increase, being the department with the highest infant mortality rate and representing 17% of the national cases (ELC La Guajira 2020). These socio-economic vulnerabilities affect particularly the Wayúu, an ethnic group that represents 38,4% of the region's population, has been historically marginalised and is particularly vulnerable (ELC La Guajira 2020; HRW 2020; Villalba Hernández 2007).

The ECLAC has identified the potential of conflict over the different water uses, including irrigation, safe water supply and mining. While mining sectors are essential for many Latin American economies, mining operations require considerable water resources and are also often linked to water pollution which can endanger water resources and lead to conflicts between different water uses (Martín and

Justo 2015). In the case of La Guajira we can see that the relevance of the agriculture and livestock industry has declined in the past few years while the lands that are best suited for agriculture have been devoted to mining while the local population continued to suffer from food insecurity and malnutrition (AREMCA and Corpoguajira 2018). Lack of access to clean water is a crucial aspect of food insecurity in La Guajira which already suffers from an overall lack of hydric resources (AREMCA and Corpoguajira 2018). The Constitutional Court of Colombia concluded that mining activities in La Guajira have degraded water quality and hindered the access of some indigenous communities to this essential resource (Corte Constitucional de Colombia 2015; 2019).

La Guajira has witnessed conflicts over the access and use of water resources between indigenous and civil society organisations and mining companies. The most notorious and controversial involves the large open-pit coal mining project of Cerrejón² that operates in the region since 1976 (Dupre-Harbord 2017). There have been claims that the mine has curtailed water resources while also polluting the remaining ones (Dupre-Harbord 2017). As a consequence, the access to water of the communities for drinking and household needs as well as for agriculture and livestock activities has been undermined (Corte Constitucional de Colombia 2015) . In recent years the conflict over water resources has been exacerbated because of the repeated drought episodes that have render the population even more vulnerable, reducing water availability and increasing food insecurity and malnutrition in the region (FAO 2019; Dupre-Harbord 2017). Projected increases in temperatures and declines in precipitations could exacerbate the problem over the access to water resources, further impacting livelihoods of vulnerable communities and potentially increase tensions between indigenous communities and mining companies.

The Colombian president has recently restated the commitment to decarbonisation by 2050 as part of the global effort to fight climate change (EFE 2021). The renewable energy transition will lead to an increasing importance of low-carbon energy and La Guajira has a great potential for wind and solar energy production (El Tiempo 2017). However, it must make sure that this transition is made in a climate security sensitive way. The investment of Enel Green Power for building a wind park that rekindled the conflict between two clans that had been fighting for more than a decade over land disputes in the village of Puerto Lopez is an example of a non-conflict sensitive climate action. The company negotiated with just one of the clan leaders without considering the other group which created resentment and renewed conflict (Mejía 2021; Bueno 2021) Therefore, the impact that climate action can have on peace and security should always be considered, as well as taking into account the unwanted effects that peacebuilding actions can have on climate action.

Pathway #2: Livelihood insecurity, illicit crops and criminal networks

Agriculture has traditionally been a crucial sector of the economy and it currently represents 7.6% of the GDP. Despite the overall decrease of the relevance of the sector in the past 50 years, during the last decade there has been an increase in the contribution of the sector to the GDP (The World Bank 2021). Agriculture has a great potential to continue growing and supporting food security, but it should effectively consider the threat posed by the climate crisis (World Bank, CIAT, and CATIE 2014). Projected increases in temperatures, soil erosion, desertification, and floods can adversely impact agriculture, resulting in declining production and productivity, increasing food insecurity particularly in rural areas (Ramirez-Villegas et al. 2012; Smith, Olosky, and Fernández 2021). Without any adaptation strategies, it is estimated that 60% of the cultivated land and 80% of the crops will be

² The Cerrejon mine is the largest coal mine in Colombia, accounting for almost half of the coal exports (Dupre-Harbord, 2016).

impacted by the changes in climate, including losses in important exports such as coffee, banana, and cocoa (Ramirez-Villegas et al. 2012). This is particularly worrisome for small scale agriculture because of its high dependency on rain-fed agriculture and its limited adapting capacity (Ramirez-Villegas et al. 2012; The World Bank Group 2021).

The cultivation of illicit crops such as coca and opium poppy by small scale farmers has been identified as an unsustainable and dangerous way to cope with food insecurity and the unpredictability of agricultural markets (UNODC n.d.). In some rural areas of Colombia there is a lack of the necessary infrastructure that can grant the access to markets for legal crops while illegal crops have fixed prices that are generally higher than other crops as well as access to markets granted by narcotraffickers and armed groups (International Crisis Group 2021).

However, the cultivation of illicit crops has a severe impact in the Colombian economy and society as well as the environment. The cultivation of illicit crops is linked to high levels of violence that particularly affect farmers which stand between the confrontations of the different armed groups and are subjected to their arbitrary rule (International Crisis Group, 2021). The planting of coca is also an important driver of deforestation and loss of biodiversity. The increase in coca cultivation has been linked to the expansion of the agricultural frontier, the increase of extensive livestock production as well as the control of the territory by NSAGs which often run illegal mining activities that further contribute to deforestation (Gutiérrez, Canal, and Ávila 2018). Deforestation, in turn, increases GHG emissions, contributing to climate change, while also altering the solar radiation, the nutrients and the humidity of the soil (Palomino López et al. 2014).

The cultivation of coca contributes to environmental degradation through the deterioration of highly biodiverse areas which are essential carbon sinks that play a crucial role in the fight against climate change. In the last two decades there has been an encroachment of coca plantations into conservation areas such as indigenous reserves, national parks and other types of conservation areas where around half of the plantations are currently located (UNODC-SIMCI 2021). The changes in land use have affected ecosystems in different ways, including the reduction of water resources (Quimbayo Ruiz 2008). The chemicals used in the processing of the coca, often done in the same place as the cultivation, generally result in the pollution of food, land and water systems (Slunge 2015).

The cultivation of coca and the associated deforestation reduce the resilience of socio-ecological systems, increasing the vulnerability to the projected increase in climate variability and extremes (Kendra McSweeney 2015). This is particularly worrisome when the environmental degradation and the loss of socio-ecological resilience -because of the strong presence of coca plantations coincides-coincide with the exposure to climate variability and extremes. For instance, the department of Putumayo, which concentrates the third largest area of coca cultivation in the country, is also exposed to an increasing number of landslides and floods (Murad and Pearse 2018; The World Bank Group 2021). In these contexts, the impact of the climate crisis could exacerbate existing social-economic, political and environmental vulnerabilities, increasing livelihood insecurity of small-scale farmers and incrementing the likelihood of their engagement in criminal and narcotrafficking networks through, for example, the cultivation of coca or opium poppy (Nett and Rüttinger 2016).

Following the Peace Agreement between the Colombian Government and the FARC-EP signed in 2016, Colombia's Program to Substitute Crops Used for Illegal Purposes was launched in 2017 to promote the voluntary substitution of illicit crops through the implementation of various sustainable projects aimed to enhance farmers livelihood and living conditions (Presidencia de la República 2017). In this post-conflict scenario, Climate-Smart Agriculture (CSA) could play a vital role in increasing the productivity and food security of Colombian farmers while also mitigating and adapting to the effects

of the climate crisis, increasing their overall resilience and the likelihood of engagement in criminal and narco trafficking networks.

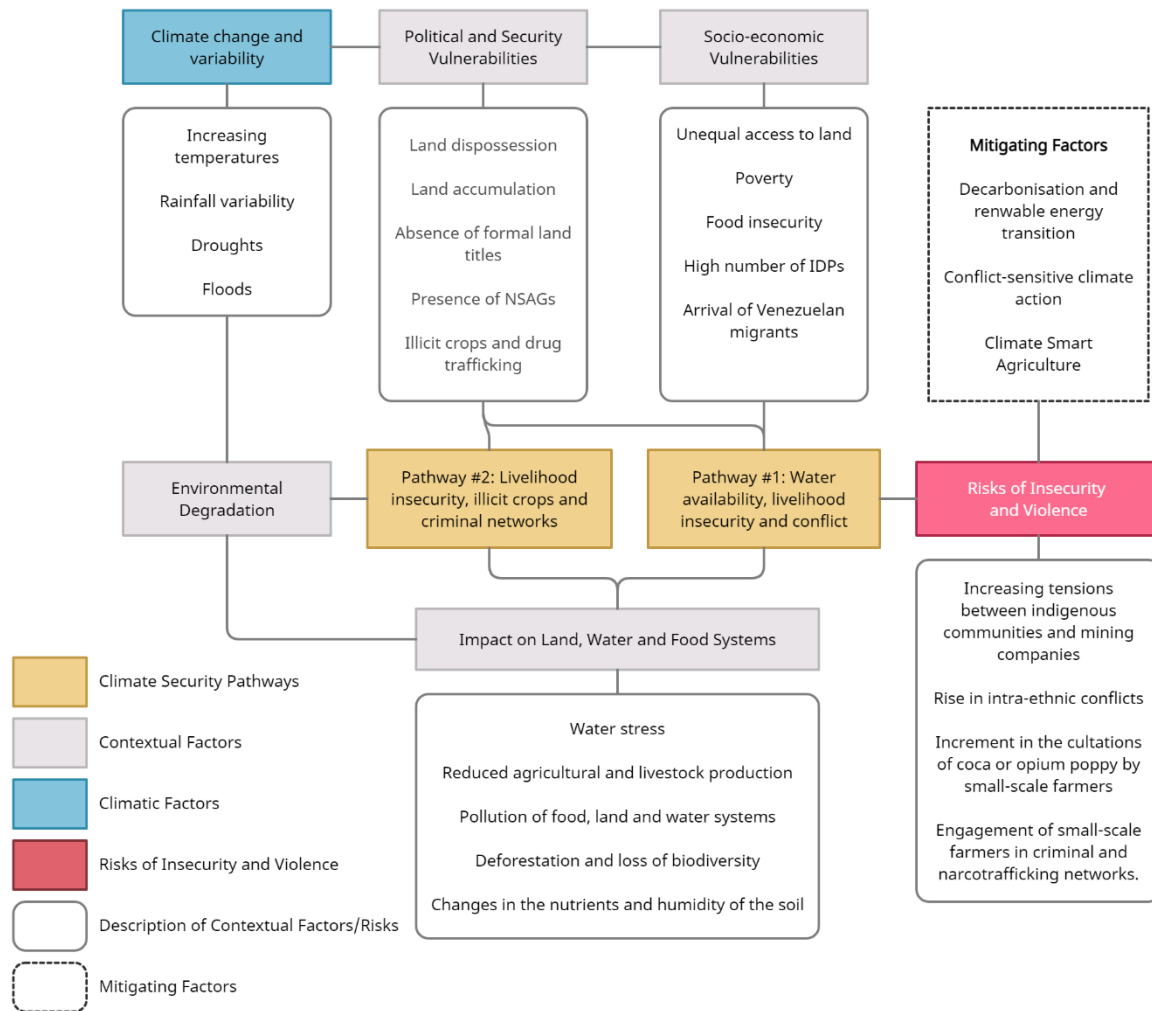


Figure 2: Climate Security Pathways for Colombia

4. Key Messages and Entry Points for Climate Security in LAC

The IPA develops different specific pathways through which climate can impact socio-economic, political and environmental vulnerabilities and exacerbate the risks of insecurity and conflict in Venezuela and Colombia. Particularly, it helps to understand how the complex and multifaceted interconnections between climate and conflict play out in specific climate security hotspots that are vulnerable to both climate and conflict. By doing so it aims to inform academics, practitioners, donors, investors, national and international policymakers about a complicated and heterogeneous reality and help them to develop more tailored responses that target those regions and communities most at risk and in need of urgent help. However, interconnected climate, security, and migration crises are being managed as separate challenges in LAC. It is essential to overcome sectoral silos between the development, climate and peace communities, making sure that climate action is more conflict-sensitive and that peacebuilding efforts take into account their impact on climate. Through well-targeted support that complements humanitarian, political, social, and security-focused solutions, agricultural research for development can help rural populations adapt to and mitigate climate change impacts, stabilize agriculture-based livelihoods, and increase peace and security.

CGIAR is uniquely positioned as a global leader in scientific research on land, water and food systems in a climate crisis. Given the interlinkages of land, water and food systems with peace and security, it follows that CGIAR science, innovation, and technologies are critical in supporting global efforts to secure sustainable peace. CGIAR aims to address gaps in knowledge about climate and food security for peace and security policies and operations through a unique multidisciplinary approach. It's main objective is to align evidence from the realms of climate, land, water and food systems science with peacebuilding efforts already underway in order to address conflict through evidence-based environmental, political, and socio-economic solutions.

CGIAR has identified several entry points for a climate security road map in LAC, including efforts to:

1. Foster inter-ministerial and inter-sectoral dialogue on currently siloed perspectives.
2. Comprehensively quantify interrelated social, economic and environmental challenges and business cases to target public and private sector investment, including in research.
3. Build on existing regional networks and transfer platforms to re-think and re-design community-based approaches that can effectively serve a range of interrelated objectives and provide space and freedom to act for locally led, community-based approaches and build local resilience.
4. Put rural human development much higher on the agenda.
5. Strengthen and focus agricultural research for development to transform the agricultural system to be resilient and productive in response to climate change as a way of enhancing rural livelihoods.

5. References

- Abdenur, Adriana Erthal, Giovanna Kuele, and Alice Amorim. 2019. "Climate and Security in Latin America and the Caribbean," Igarapé Institute: Rio de Janeiro.
- Abdenur, Adriana Erthal, and Lukas Rüttinger. 2020. "Climate-Fragility Risk Brief: Latin America and the Caribbean." Climate Security Expert Network, Berlin: adelphi.
- ACNUR. 2011. "Tendencias Globales Desplazamiento Forzado En 2020." Copenhagen.
- AREMCA, and Corpogujira. 2018. "Plan Integral De Cambio Climático Del Departamento de La Guajira." Barranquilla.
- Bárcena, Alicia, Antonio Prado, Luis Fidel Yáñez, and Ricardo Pérez. 2016. "Food and Nutrition Security and the Eradication of Hunger: CELAC 2025 - Furthering Discussion and Regional Cooperation." Santiago. https://repositorio.cepal.org/bitstream/handle/11362/39838/1/S1600016_es.pdf.
- Barreto, Maria Beatriz. 2008. "Diagnostics about the state of mangroves in Venezuela: Case studies from the National Park Morrocoy and Wildlife Refuge Cuare." In Lieth H., Sucre M.G., Herzog B. (eds) *Mangroves and halophytes: restoration and utilisation, Tasks for Vegetation Sciences*, vol 43, pp. 51-64, Springer, Dordrecht. https://doi.org/10.1007/978-1-4020-6720-4_6.
- Bilbao, Bibiana A., Alejandra V. Leal, and Carlos L. Méndez. 2010. "Indigenous use of fire and forest loss in Canaima National Park, Venezuela. Assessment of and tools for alternative strategies of fire management in Pemón indigenous lands." *Human Ecology* 38(5): 663-673.
- Bonet-Morón, Jaime, and Lucas Hahn-De-Castro. 2017. "La Mortalidad y Desnutrición Infantil En La Guajira." Cartagena.
- Bonet-Morón, Jaime, Diana Riccuulli-Marín, and Daniela Peña. 2021. "San Andrés y Providencia En El Siglo XXI y La Pandemia Del COVID-19." *Documentos de Trabajo Sobre Economía Regional y Urbana. Banco de La República*, no. 296: 1-44. <https://repositorio.banrep.gov.co/bitstream/handle/20.500.12134/9997/DTSERU296.pdf?sequence=4&isAllowed=y>.
- Braun, Carsten, and Maximiliano Bezada. 2013. "The History and Disappearance of Glaciers in Venezuela." *Journal of Latin American Geography* 12(2): 85-124. <http://www.jstor.org/stable/24394855>.
- Bueno, Daniela. 2021. "Los Líos Entre Clanes Wayuus Por Construcción de Parques Eólicos." *El Espectador*. 2021. <https://www.elespectador.com/colombia/mas-regiones/los-lios-entre-clanes-wayuus-por-construccion-de-parques-eolicos/>.
- Burelli, Cristina Vollmer. 2021. "Venezuela's Ecological Death Spiral: Formulating a Global Response." *Commentary, Center for Strategic and International Studies (CSIS)*, <https://www.csis.org/analysis/venezuelas-ecological-death-spiral-formulating-global-response#English>
- Burelli, Cristina Vollmer. 2020. "Venezuela's Ecocide Needs International Attention." *Commentary, Center for Strategic and International Studies (CSIS)*, <https://www.csis.org/analysis/venezuelas-ecocide-needs-international-attention>
- Burke, Marshall, Solomon M. Hsiang, and Edward Miguel. 2015. "Climate and Conflict." *Annual Review of Economics* 7 (1): 577-617. <https://doi.org/10.1146/annurev-economics-080614-115430>.

- Chemnick, Jean. 2019. "Where Climate Change Fits into Venezuela's Ongoing Crisis." *Scientific American*, February 18, <https://www.scientificamerican.com/article/where-climate-change-fits-into-venezuela-s-ongoing-crisis/>
- Collins, Joshua. 2019. "Mapped: The Venezuelan diaspora and growing emigration challenges." *The New Humanitarian*, <https://www.thenewhumanitarian.org/news/2019/11/21/Venezuela-migrants-visa-restrictions-Colombia>
- Colombian Government. 2010. "Colombia- Second National Communication to the United Nations Framework Convention on Climate Change." Bogotá, D.C. <https://doi.org/10.1515/9780271072258-004>.
- Congressional Research Service. 2021. "Venezuela: Political Crisis and U.S. Policy." September 15, <https://sgp.fas.org/crs/row/IF10230.pdf>
- Contreras, Diana, and Sandra Contreras. 2016. "Consequences of the Armed Conflict as a Stressor of Climate Change in Colombia." *The 6th International Conference of Disaster Risk Reduction (IDRC)*.
- Corrales, Javier. 2019. "How to Tackle Venezuela's Military Problem." *NY Times*. <https://www.nytimes.com/2019/03/04/opinion/venezuela-military-maduro-guaido.html>.
- Corte Constitucional de Colombia. 2015. "Sentencia T-256/15." Corte Constitucional de Colombia. 2015. <https://www.corteconstitucional.gov.co/relatoria/2015/t-256-15.htm>.
2019. "Sentencia T-614/19." Corte Constitucional de Colombia. 2019. <https://www.corteconstitucional.gov.co/relatoria/2019/T-614-19.htm>.
- DANE. 2021. "Pobreza Monetaria En Colombia - Resultados 2020." Bogotá. https://www.dane.gov.co/files/investigaciones/condiciones_vida/pobreza/2018/bt_pobreza_monetaria_18.pdf.
- Dell, Melissa, Benjamin F. Jones, and Benjamin A. Olken. 2012. "Temperature Shocks and Economic Growth: Evidence from the Last Half Century." *American Economic Journal: Macroeconomics* 4 (3): 66–95. <https://doi.org/10.1257/mac.4.3.66>.
- Dupre-Harbord, Justin. 2017. "Policy Brief Conflict over Water and Mining." London.
- Ebus, Bram. 2019a. "Why Environmental Security is Paramount to Venezuela's Future." *Commentary, Advocacy for Human Rights in the Americas*, 22 Oct 2019. <https://www.wola.org/analysis/environmental-security-venezuela-solution/>
- Ebus, Bram. 2019b. "Venezuela's mining arc: a legal veneer for armed groups to plunder." *The Guardian*, 8 June 2019. <https://www.theguardian.com/world/2019/jun/08/venezuela-gold-mines-rival-armed-groups-gangs>
- Ebus, Bram. 2020. "Under a Merciless Sun: Venezuelans Stranded Across the Colombian Border." Brussels.
- Ebus, Bram. 2020. "Under a Merciless Sun: Venezuelans Stranded Across the Colombian Border." *Commentary, International Crisis Group*. <https://www.crisisgroup.org/latin-america-caribbean/andes/colombiavenezuela/under-merciless-sun-venezuelans-stranded-across-colombian-border>
- EFE. 2021. "Ivan Duque Reafirma El Compromiso de Colombia Con La Descarbonización En 2050." EFE. 2021. <https://www.efeverde.com/noticias/ivan-duque-reafirma-el-compromiso-de-colombia-con-la-descarbonizacion-en-2050/>.
- ELC La Guajira. 2020. "Briefing Departamental La Guajira."

- <https://reliefweb.int/report/colombia/briefing-departamental-la-guajira-junio-2020>.
- Ellis, Evan. 2020. "Venezuela: Pandemic and Foreign Intervention in a Collapsing Narcostate." Center for Strategic and International Studies (CSIS), <https://www.csis.org/analysis/venezuela-pandemic-and-foreign-intervention-collapsing-narcostate>
- FAO. 2016. "Peace, Conflict, and Food Security: What Do We Know about the Linkages?" FAO: Rome. <https://www.cfr.org/article/peace-conflict-and-covid-19>.
- FAO. 2019. "Cuando Actuar Temprano Salva Vidas: Seguridad Alimentaria y Cohesión Social En La Guajira, Primera Línea de La Crisis Migratoria y de Sequía Extrema." Rome.
- GIFMM La Guajira. 2020. "Infografía de Refugiados y Migrantes Venezolanos."
- Guereña, Arantxa. 2016. "Unearthed: Land, Power and Inequality in Latin America." Nairobi.
- Gutiérrez, Ruth, Dubán Canal, and Fabio Ávila. 2018. "Cultivos de Coca En Colombia: Impactos Socio-Ambientales y Política de Erradicación." Bogotá, D.C. http://fileserv.idpc.net/library/Capitulo_4.pdf.
- Harrison, Ethan, and Klaus Kristensen. 2021. "Secondary impacts of COVID-19: Closing civic space in fragile contexts." Development Futures Series, UNDP Global Policy Network Brief. <https://www.undp.org/publications/secondary-impacts-covid-19-closing-civic-space-fragile-contexts>
- HRW. 2020. "Colombia: Niños Indígenas En Riesgo de Desnutrición y Muerte." Human Rights Watch. 2020. <https://www.hrw.org/es/news/2020/08/13/colombia-ninos-indigenas-en-riesgo-de-desnutricion-y-muerte>.
- Human Rights Watch. 2021. "Venezuela: Events of 2020." Human Rights Watch. <https://www.hrw.org/world-report/2021/country-chapters/venezuela>
- IDEAM, PNUD, MADS, DNP, and CANCELLERÍA. 2015. "Escenarios de Cambio Climático Para Precipitación y Temperatura Para Colombia 2011-2100 Herramientas Científicas Para La Toma de Decisiones – Estudio Técnico Completo: Tercera Comunicación Nacional de Cambio Climático." *Tercera Comunicación Nacional de Cambio Climático*. Vol. 6. Bogotá,. <http://documentacion.ideam.gov.co/openbiblio/bvirtual/022963/022963.htm>.
2017. "Tercera Comunicación Nacional de Colombia a La Convención Marco de Las Naciones Unidas Sobre Cambio Climático (CMNUCC)." Bogotá, D.C.
- Institute of Economics & Peace. 2021. "Global Peace Index 2021: Measuring Peace in a Complex World." Sydney. <http://visionofhumanity.org/reports>.
- International Crisis Group. 2021. "Raíces Profundas: Coca, Erradicación y Violencia En Colombia." Brussels.
- Kendra McSweeney. 2015. "El Impacto De Las Políticas De Drogas En El Medio Ambiente." New York.
- Martín, Liber, and Juan Bautista Justo. 2015. "Análisis, Prevención y Resolución de Conflictos Por El Agua En América Latina y El Caribe." Santiago. https://www.cepal.org/sites/default/files/events/files/analisis_prevencion_y_resolucion_de_conflictos_por_el_agua_en_america_latina_y_el_caribe_se_ruega_no_circular.pdf.
- Mejía, Eliana. 2021. "Conflicto de Clanes Wayuu Cobra Vida y Pone En Peligro Parque Eólico - Otras Ciudades - Colombia." El Tiempo. 2021. <https://www.eltiempo.com/colombia/otras-ciudades/conflicto-de-clanes-wayuu-cobra-vida-y-pone-en-peligro-parque-eolico-596660>.

- Murad, Cesar Augusto, and Jillian Pearse. 2018. "Landsat Study of Deforestation in the Amazon Region of Colombia: Departments of Caquetá and Putumayo." *Remote Sensing Applications: Society and Environment* 11: 161–71. <https://doi.org/10.1016/j.rsase.2018.07.003>.
- Nett, Katharina, and Lukas Rüttinger. 2016. "Insurgency, Terrorism and Organised Crime in a Warming Climate: Analysing the Links between Climate Change and Non-State Armed Groups." Berlin. https://doi.org/10.29171/azu_acku_pamphlet_ge320_a33_n488_2016.
- Pacheco-Angulo, Carlos, Emilio Vilanova, Inmaculada Aguado, Sergio Monjardin, and Susana Martinez. 2017. "Carbon emissions from deforestation and degradation in a forest reserve in Venezuela between 1990 and 2015." *Forests* 8(8): 291.
- Palomino López, Rodolfo, Ricardo Alberto Restrepo Londoño, Norberto Mujica Jaime, Jaime Alberto Barrera Hoyos, Tito Yesid Castellanos Tuay, and Carlos Arturo Peña. 2014. "COCA: Deforestación, Contaminación y Pobreza." Bogotá. <http://www.odc.gov.co/Portals/1/publicaciones/pdf/oferta/estudios/OF5022014-coca-deforestacion-contaminacion-pobreza.pdf>.
- Paúl, María Luisa. 2021. "Oil slicks and algae blooms marring Venezuela's largest lake are visible from space." *The Washington Post*, October 7, <https://www.washingtonpost.com/world/2021/10/07/oil-pollution-lake-maracaibo-venezuela/>
- PNUD. 2011. "Colombia Rural: Razones Para La Esperanza." *Informe Nacional de Desarrollo Humano 2011*. Bogotá. http://www.co.undp.org/content/dam/colombia/docs/DesarrolloHumano/undp-co-ic_indh2011-parte1-2011.pdf.
2019. "La Guajira - Retos y Desafíos Para El Desarrollo Sostenible."
- Pons-Vignon, Nicolas, and Henri-Bernard Solignac Lecomte. 2004. "Land, Violent Conflict and Development." Paris. <http://www.eldis.org/vfile/upload/1/document/0708/DOC16656.pdf>.
- Presidencia de la República. 2017. "Decreto-Ley 896 de 2017." Bogotá.
- Quimbayo Ruiz, German Andres. 2008. "Crops for Illicit Use and Ecocide." *Drug Policy Briefing*. Amsterdam.
- Ramirez-Villegas, Julian, Mike Salazar, Andy Jarvis, and Carlos E. Navarro-Racines. 2012. "A Way Forward on Adaptation to Climate Change in Colombian Agriculture: Perspectives towards 2050." *Climatic Change* 115 (3–4): 611–28. <https://doi.org/10.1007/s10584-012-0500-y>.
- Ross, Michael. 2014. "Conflict and Natural Resources: Is the Latin American and Caribbean Region Different from the Rest of the World?" *Transparent Governance*.
- Slunge, Daniel. 2015. "Conflict , Environment and Climate Change in Colombia." Gothenburg. <https://doi.org/10.13140/RG.2.1.1495.2808>.
- Smith, Jessica M., Lauren Olosky, and Jennifer G. Fernández. 2021. "The Climate-Gender-Conflict Nexus: Amplifying Women's Contributions at the Grassroots." *Georgetown Institute for Women, Peace and Security*. Washington, D.C.
- The World Bank. 2021. "Agriculture, Forestry, and Fishing, Value Added (% of GDP) - Colombia." The World Bank. 2021. <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=CO>.
- The World Bank Group. 2021. "Climate Risk Country Profile - Colombia." Washington, D.C. www.worldbank.org.
- Thomson, Frances. 2011. "The Agrarian Question and Violence in Colombia: Conflict and

- Development." *Journal of Agrarian Change* 11 (3): 321–56. <https://doi.org/10.1111/j.1471-0366.2011.00314.x>.
- Tiempo, El. 2017. "La Guajira, Todo Un Potencial Energético - Sectores - Economía." El Tiempo. 2017. <https://www.eltiempo.com/economia/sectores/la-guajira-todo-un-potencial-energetico-123500>.
- Trejos Rosero, Luis Fernando. 2017. "Narcotráfico En La Región Caribe." Bogotá. <https://library.fes.de/pdf-files/bueros/kolumbien/13202.pdf>.
- UNHCR. 2021. "Data reveals plight of Venezuelan refugees and migrants evicted in pandemic." 25 October, <https://www.unhcr.org/news/latest/2021/10/61769bea4/data-reveals-plight-venezuelan-refugees-migrants-evicted-pandemic.html>
- UN Secretary-General. 2009. "Climate Change and Its Possible Security Implications - Report of the Secretary-General." New York: United Nations.
- United Nations. 2020. "The UN Secretary-General Speaks on the State of the Planet." UN News. December 2, 2020. <https://www.un.org/en/climatechange/un-secretary-general-speaks-state-planet>.
- University of Notre Dame. 2019. "Notre Dame-Global Adaptation Index-Venezuela." <https://gain-new.crc.nd.edu/country/venezuela>
- UNODC-SIMCI. 2021. "Colombia: Monitoreo de Territorios Afectados Por Cultivos Ilícitos 2020." Bogotá.
- UNODC. n.d. "Illicit Crop Cultivation." United Nations Office on Drugs and Crime. Accessed November 17, 2021. <https://www.unodc.org/unodc/en/alternative-development/illicit-crop-cultivation.html>.
- USAID. 2013. "Property Rights and Resource Governance: Colombia." Washington, D.C. http://www.usaidlandtenure.net/sites/default/files/country-profiles/full-reports/USAID_Land_Tenure_Dominican_Republic_Profile.pdf.
- Villalba Hernández, José A. 2007. "Wayúu Resistencia Histórica a La Violencia." Barranquilla.
- Walsh, Colleen. 2019. "Understanding Venezuela's collapse." The Harvard Gazette, February 12, <https://news.harvard.edu/gazette/story/2019/02/harvard-expert-tries-to-make-sense-of-venezuelas-collapse/>
- Watson, Katy. 2017. "Venezuela crisis: Farmers struggle as people go hungry." BBC News, 21 December, <https://www.bbc.com/news/world-latin-america-42398814>
- Watters, Ray. "Venezuela: Chaos and Decline." In *Rural Latin America in Transition: Development and Change in Mexico and Venezuela*, pp. 253-275. Palgrave Macmillan.
- WFP. 2020. "Colombia: Annual Country Report 2020 - Country Strategic Plan 2017 - 2021." Rome.
- WFP, and ICBF. 2008. "Mapas de La Situación Nutricional En Colombia." Bogotá. <https://www.acnur.org/fileadmin/Documentos/Publicaciones/2008/6825.pdf?file=t3/f>.
- World Bank. 2009. "Venezuela-Country note on climate change aspects in agriculture." World Bank, <https://documents1.worldbank.org/curated/en/569671468270867213/pdf/538010BRI0Clim10Box345626B01PUBLIC1.pdf>
- World Bank. 2021. "Poverty & Equity Brief: Colombia." Washington, D.C. <https://databank.worldbank.org/data/download/poverty/987B9C90-CB9F-4D93-AE8C->

750588BF00QA/AM2020/Global_POVEQ_COL.pdf.

World Bank. 2021. "Climate Change Knowledge Portal-Venezuela."
<https://climateknowledgeportal.worldbank.org/country/venezuela/vulnerability>

World Bank, CIAT, and CATIE. 2014. "Climate-Smart Agriculture in Colombia." *CSA Country Profiles for Latin America Series*. Washington, D.C. <https://ccafs.cgiar.org/publications/climate-smart-agriculture-peru#.WW1A-YTyvm4>.