

CLIMATE-FRAGILITY RISK BRIEF

EL SALVADOR

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PROVIDED BY

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The **climate diplomacy initiative** is a collaborative effort of the German Federal Foreign Office in partnership with adelphi. The initiative and this publication are supported by a grant from the German Federal Foreign Office. www.climate-diplomacy.org

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Federal Foreign Office



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Published by: adelphi research gGmbH, Alt-Moabit 91, 10559 Berlin, Germany www.adelphi.de

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Date: March 2023

Editorial responsibility: adelphi

Layout and design: Marina Piselli (studio-grafico.de)

Infographics: Katarina Schulz, Héctor Morales Munoz (adelphi)



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SUMMARY

El Salvador is one of the countries forming the Central American Dry Corridor. The Central American Dry Corridor faces poor distribution of irregular rain, drought, environmental degradation and low crop yields, which creates vulnerability. Large parts of the El Salvadorian people are exposed to poverty, climate change, extreme climate events, violence and insecurity. In rural areas, where livelihoods often depend on subsistence farming, and in urban centres, people suffer from food insecurity. Gang violence is another big problem for El Salvador. The country had one of the highest homicide rates in the world picking in 2015. El Nino phenomena and volcanic activity heavily impact El Salvador. Over the past twenty years, it has suffered from the disastrous impacts of earthquakes and extreme weather events, such as tropical cyclones, storms, depressions, and droughts.

Under these circumstances, many people emigrate from El Salvador, predominantly due to gang-related violence and lack of economic opportunities, but also due to climate-related causes towards neighbouring countries and the USA. Since El Salvador's decade-long civil war ended in 1992, remittances have become the second largest source of external income after exports. The insecurity from gang-related violence and the lack of economic opportunity and labour force in the rural areas leave the country with few chances for long-term prosperity. The state has a weak capacity to adapt and cope with disaster damage and risk as it faces governance challenges. This leaves the needs of the vulnerable population neglected.

El Salvador is caught in a vicious circle of poverty, migration and violence, and this convergence implies that the country is fragile to climate change impacts undermining human security. The country lacks the resources and capacities to cope with the rapidly growing adverse impacts of climate change, which interact with socioeconomic, demographic and political factors to compound fragility risks.

Against this backdrop, this risk brief charts how food insecurity, gang-related violence and migration interact, creating human insecurity and how adverse climatic conditions exacerbate this vicious circle in El Salvador. It also presents entry points to address climate-fragility risks in El Salvador. These include:

- Implement a coordinated approach to address climate vulnerability, migration, and conflict in El Salvador by conducting locally grounded sub-national climate and security risk assessments.
- Support sustainable rural development and stable local economies to create opportunities for vulnerable youth. Strategies to confront violence should target marginalized populations, provide education, security, and economic opportunities, and build institutions to combat corruption and increase trust in the political system.
- Support landscape restoration initiatives to create the basis for inclusive rural development and increase climate resilience.
- Awareness raising, capacity building and institutional strengthening for climate change resilience and socially inclusive development
- Support reintegration of ex-convicts and youth at-risk populations within green job initiatives to prevent crime sustainably.

SOCIO-ECONOMIC AND POLITICAL CONTEXT

National context

El Salvador, on the Pacific Ocean side of the Central American Isthmus (Figure 1), is the smallest country in the American continent (20,000 km²). In pre-Columbian times, its fertile soils derived from volcano dominated landscapes attracted a large immigration, turning what is now El Salvador into the most densely populated territory in Central America, with 700,000-800,000 people in 1519, just before the Spanish Conquest (Fowler, 1988). This amounts to half the population counted by the 1930 Census, four centuries later. With rich volcanic soils and a large population as the source of its wealth, El Salvador became the largest producer of export mono crops in Central America: Cacao until the 16th century; indigo during the 17th-19th centuries; and coffee for most of the 20th century (Bergman, 1969; Browning, 1971; Tous, 2008, 2011).

Figure 1| El Salvador in the Central American Isthmus. © ian.macky.net [CCO]



From 1864 to 1890, the coffee area grew from 850 to 46,200 hectares (Lauria-Santiago, 1999: 134). As it expanded to the highest mountains, remaining forests were cut or burned down; and in 1881-1882 communal lands were abolished to give way to coffee, leading to large-scale dispossession of small farmers who were pushed to erodible marginal lands (Browning, 1971; Standley, 1922). A botanist who in 1922 collected plants all over El Salvador was so impressed by land degradation in those marginal lands that he said: “in no part of the earth is there greater need for the conservation of trees and other natural vegetation, or for efficient substitutes for them” (Standley, 1922:319).

From 1980-1992 El Salvador experienced a civil war. The Government of El Salvador (GOES), supported by the US, was up against the left-leaning Farabundo Martí National Liberation Front (FMLN) that received support from Nicaragua, Cuba and the Soviet Union. The U.S. government provided military support to the Salvadoran government, but also massive economic aid through the 1980s and early 1990s. Balance of payment support stabilized the economy, and its conditionality complemented direct project support to advance transformations in line with U.S. policy objectives (Rosa 1993a)¹.

The war and the Peace Accords influenced the course of economic development and impacted the pattern of socio-economic inequalities, still traceable in climate fragility risks the country faces.

¹ For instance, during the Magaña provisional government (May 1982-May 1984) balance of payment assistance was conditioned to progress of the agrarian reform and under Duarte (June 1984-May 1989), to macroeconomic policy reform, including a exchange-rate devaluation (Rosa, 1993a).





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Historical, economic and political context

Since the 16th century, El Salvador has been a large exporter of mono crops; first cacao, then indigo and afterwards coffee (Bergman, 1969; Browning, 1971; Tous, 2008, 2011). By 1922, the share of coffee exports in total exports had risen to 86% and in several years during 1924-1932 was as high as 95% (Marroquin, 1977)). This extreme dependence magnified the impact of the New York stock market crash (October 29, 1929) and the Great Depression. The reformist agenda of a moderate social-democrat, Arturo Araujo (president March to December 1931) was frustrated by empty coffers and deep economic crisis and he was overthrown by a military coup. In January 1932, a peasant uprising in coffee growing areas in Western El Salvador culminated lead to the massacre of thousands of campesinos (Lindo-Fuentes, 2004).

In 1945-1946, a land-use survey led by a team from the U.S. Department of Agriculture (USDA) confirmed extensive land degradation from subsistence agriculture and overgrazing and recommended that one fourth of the country's total surface be retired from tillage agriculture.²

² According to the survey technical leader: "Land [...] which from the point of view of soil and moisture conservation should not be cultivated [...] represents at least 50 percent and possibly much more of the total land area in the Republic. The soils on perhaps half of this land are [...]eroded to a state of virtual uselessness [...]. However, the rest of the lands not suitable for cultivation still have soils potentially capable of producing useful commodities—that is to say, forest products, forage and, for a little of the best soil, crops such as coffee, fruits, henequen, and others that can be produced by methods providing adequate protection against erosion. These are the lands that should be retired from uses involving tillage as quickly as is feasible". (Bourne, 1948:632-633).



The radical proposal relied on “undeveloped coastal plain areas with good soils [...] to replace [...] a substantial part of the lands needing to be retired from cultivation” (Bourne, 1948:633). Coffee elites blocked the initiative. As a 1949 World Bank report put it: “Economic policy in El Salvador is to a major extent determined by the interests of the coffee planters, who dominate the life of the country [...]. The problem of economic development is complicated by the necessity for reconciling the desire of plantation owners to hold down production costs [...] and the growing recognition that the country’s long-term interests require greater diversification” (IBRD, 1949:64).

After the Second World War, a new constitution enshrined a strong role for the state while the old 1886 constitution called for a minimalist state. The administration, led by Colonel Oscar Osorio contracted several World Bank loans to fund its ambitious infrastructure plan, chiefly hydroelectric development and roads, including a coastal highway that was also supposed to improve land-use through a denser settlement in the coastal zone (IBRD, 1954a:3-4). Instead, the highway facilitated the extraordinary growth in area dedicated to cotton “at the expense of both cattle ranching and subsistence farming. Tenants and squatters were ousted by expanding plantations [...]” (Browning, 1979:235-236). In its wake, cotton left a devastating environmental legacy through deforestation, contamination by heavy pesticide use, and land degradation. Its social legacy was equally damning (Browning, 1979:239).

Industrialization policies triggered a highly import intensive industrial development that generated few jobs or even destroyed existing ones.³ However, economies of scale brought about by that industrial expansion were incompatible with the small size of the local market, a situation aggravated by the high levels of poverty. Thus, El Salvador went aggressively after the regional markets through bilateral trade treaties, and, eventually, under the Central American Common Market⁴ (Bulmer-Thomas, 1987: 174).

Honduras, with the most negative trade balance in the region, had the most imbalanced trade relationship with the region’s second biggest exporter, El Salvador (Wilford & Christou,

³ For instance, in shoe manufacturing, the establishment of two plants in 1953 - one totally mechanized and a second partially mechanized - radically changing the sector that previously produced shoes by hand (IBRD, 1954b).

⁴ It was created under the General Treaty of Central American Economic Integration, signed in December 1960 by all the Central American countries, except Costa Rica, which joined in 1963 (Bulmer-Thomas, 1987:174).

1973:166). This contributed to escalating tensions between the two countries. On 14 July 1969, the Salvadoran army invaded Honduras. The war produced hundreds of deaths on both sides, the return of some 100,000 Salvadorans who resided in Honduras, and the closure of the escape valve for landless peasants in El Salvador (Durham, 1979:1).⁵ It paralyzed the common market and led to a sharp drop of Salvadoran exports to the region.

In 1979, coup leaders established a junta that included civilians who proposed deep reforms: land reform, nationalization of the banking system, and strict state control of external trade. However, this agenda did not go along with “a counterinsurgency plan designed by United States” (Dada-Hirezi, 2017: 6). USAID played a key role in advancing U.S. interest in El Salvador (Rosa, 1993a). For example, USAID paved the way for the rapid implementation of economic liberalisation.⁶ Also, USAID project support focused on the agrarian reform in the early 1980s but shifted to promoting exports and the private sector soon after (Rosa, 1993a).

Economic reform and peace accords on separate tracks

A structural adjustment loan approved by the World Bank on 12 February 1991 (SAL I) included a financial reform to advance the restructuring and privatisation of the banking system which had been nationalised in 1980 (World Bank, 1995).⁷ This re-privatization allowed elite family groups, weakened by the 1980 reforms but now at the helm of the government, to regain control over banks without major investments of their own (Bull, 2013), providing them through the intermediation of increasing flow of remittances with an alternative economic base for political power. The UN-brokered negotiations to end the civil war, the first time the UN Security Council supported mediation in an internal conflict (Del Castillo, 2017:7), represented a risk for those elite groups and the government responded by declaring its economic policy non-negotiable with the connivance of the Bretton Wood institutions, while the UN acquiesced.⁸

Today, remittances are the key factor in the reduction of poverty and overall inequality and represent the second largest source of external income after exports (World Factbook 2021). In 2020, 24% of households received remittances (World Bank 2022d). The share of the population living on less than US\$5.50 a day (PPP 2011) has dropped from 60% in 1991 to 22.3% in 2019 (Worldbank 2021b). General inequality, as measured by the Gini Index, also fell from 54.5 in 1998 to 38.8 in 2019 (World Bank 2021a). These results are largely explained by the role of remittances (Acevedo et al. 2014).

⁵ For Ehrlich et al. (1977:908), overpopulation and limited resources led hundreds of thousands of Salvadorans to seek land in Honduras, and were the cause of the war. According to Durham (1979:48), land access per poor rural family fell from 7.4 ha to 0.4 ha in El Salvador between 1892 and 1971, but argued that only 15% of that reduction was explained by population growth, the other 85% was explained by increased land tenure concentration.

⁶ Internal prices of many products were liberalized in June 1989; the exchange rate was partially liberalized in July; public service rates increased in August; and imports tariffs were first reduced in September (Rosa, 1993b).

⁷ In September 1989, GOES submitted a draft structural adjustment program to the World Bank (World Bank, 1995). On August 1990, a standby agreement was signed with the IMF, but no amount was drawn. The first structural adjustment loan (SAL I) also included provisions related to: trade policy (narrowing the tariff band), tax policy (introducing the VAT), monetary policy (liberalization of interest rates), agricultural sector reforms (liberalization of producer prices and divestiture of assets of the agricultural marketing agencies) (Ibid).

⁸ As Alvaro de Soto, the UN mediator, and his colleague Graciana del Castillo point out: “The adjustment program and the stabilization plan, on the one hand, and the peace process, on the other, were born and reared as if they were children of different families. (...) the IMF and the World Bank did not consult with the U.N. in the elaboration and subsequent implementation of the economic program they sponsor... they followed their perceived path as if there were no war, often supporting government projections that underestimated the costs of peacebuilding. When the U.N. itself engaged in peace negotiations early in 1990, it did not think to consult the IMF or the Bank, notwithstanding the serious financial implications of post-war rehabilitation and reconstruction of the Salvadoran economy. Not even during the negotiation of the economic and social portion of the peace accords in late December 1991 was participation of the Bretton Woods institutions sought (...) It was as if a patient lay on the operating table with the left and right sides of his body separated by a curtain and unrelated surgery being performed on each side”. (de Soto and del Castillo, 1994)

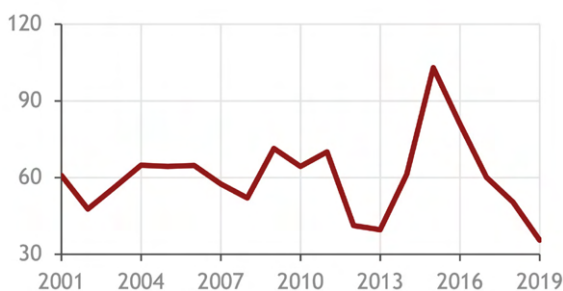


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Security situation

From 1980 to 1992, civil war raged in El Salvador and, afterwards, civil war violence was replaced by criminal homicidal violence. El Salvador's homicide rate rose from 70 homicides per 100,000 inhabitants in 1990 (Zinecker, 2017:4), mostly war related, to 142 in 1995 when gangs were still "at an embryonic stage of development" (Ibid:4). Thus, the void left by the dismantling of the military-dominated security apparatus was the key factor in this homicidal surge. As the new National Civilian Police was deployed, the homicide rate fell to 52.8 by 2002, and despite up and downs, it was still 52.0 in 2018, the highest in the world (UNODC 2021 and World Bank 2022a). Between 2018 and 2020, the number of homicides dropped drastically from 3,346 to 1,341 (Infosegura 2021), which represents a homicide rate of 19.7 in 2020 with 3.67 murders per day (Statista 2021 and La Prensa Grafica 2021). (see Figure 2) During the Covid-19 pandemic in 2020, homicide rates in El Salvador dropped temporarily during lockdowns, when fewer people were in the streets, only to spike again as restrictions eased (Brigida 2021).

Figure 2 | El Salvador homicide rates, 2001-19: number of homicides per 100,000 inhabitants. (Source: UNODC 2021 and Infosegura 2021)



El Salvador's territorial control plan, introduced in 2020 to combat high rates of murder and crime, specifically targets 22 out of El Salvador's 262 municipalities by increasing law enforcement presence and building community centers to provide a safe space for youth to spend their free time and prevent gang recruitment. Some claim that the drastic drop in homicides responds to this plan. However, the claim that the plan can be credited with the overall decrease is contradicted by the fact that the reduction of homicides in El Salvador was nationwide rather than restricted to these targeted communities. Others argue that reasons for success might lie in quiet, informal understandings between gangs and the government. Visits of government members in prisons to meet gang members have been documented and it has been reported that a reduction in homicides was among the concessions that gang leaders had agreed to in exchange for prison privileges, including the reversal of a government decision to merge cells of opposing gang members (International Crisis Group 2020 and Brigida 2021). Furthermore, the results of a state of emergency in El Salvador to fight gangs means that fundamental rights have been lifted, such as a person's right to be informed why they are arrested or the right to a lawyer (International Crisis Group 2022).

In recent years, homicidal violence has largely been determined by gang activities. Gangs have expanded their economic basis and political influence. Their control in some areas is pervasive to a point of establishing parastatal functions (Cruz et al. 2017: 4; Farah and Babineau 2017; García & Rojas 2020: 103-105). They spread into rural areas affecting security of rural communities (IDMC 2018: 26, 31; Dudley et al. 2018: 3). They recruit young people, mostly from low-income disintegrated or incomplete families, in search of a collective identity, material resources, family, friends, or a higher social status (Cruz et al. 2017: 17-24; IDMC 2018: 15).

The most important gangs in El Salvador trace their roots to two gangs formed in Los Angeles, California: 18th Street Gang (Barrio 18) by Mexican youth in the 1960s, and Mara Salvatrucha (MS-13) by Salvadoran immigrants in the early 1980s (Cruz et al., 2017: 13). Among those deported from the U.S. to El Salvador for "criminal cause", which rose from tens in the mid-1980s to hundreds in the late 1980s and early 1990s, ⁹ there were young men who had belonged to those two gangs (Zinecker 2017:4). However, the contemporary gang phenomenon is predominantly "a product of local structural conditions", as just 1% of gang members and former gang members surveyed in 2016 grew up in the U.S. (Cruz et al. 2017: 19). The profile of gang members and former gang members according to the 2016 survey (Ibid) is:

- 90.5% male
- 40% joined a gang between 13 and 15 years old and 77% while under 18 years old
- average age of joining a gang was 15.6 years for males and 18.3 years for females
- 47% left their home before turning 15
- 94% did not complete high school, almost 25% did not complete elementary school; 70% dropped out of school on average 5.9 years before joining the gang.
- 83% were not formally employed and only 14% had an informal job. Breakdown of homicide victims by age and sex for 2019 is consistent with that profile.
- 90% of homicide victims were male.
- More than half of homicide victims were adolescents and young adults of 15-29.
- 1.2% of homicide victims in 2019 were children and preadolescents in the 0-14 age range; male victims in that group more than doubled female victims.¹⁰

⁹ The data comes from the U.S. Immigration and Naturalization Service.

¹⁰ The data comes from El Salvador Ministry of Justice and Public Security.



So far, government responses have failed to reduce gang violence. The 2003 *Mano Dura* (Iron fist) and 2004 *Super Mano Dura* plans increased pressure on the population in gang-controlled areas, making interaction with communities more difficult for government forces (Cruz et al. 2017; García and Rojas 2020: 103-105; IDMC 2018: 16-18; Watkins and Kohut 2018). Gangs became important political actors through financing local politicians and influence on elections (Farah and Babineau 2017). A 2012 government-sponsored gang truce (Aguilar, 2019: 44-47) led to a sharp drop in the homicide rate but as the truce unravelled it shot up again peaking in 2015. After this, it dropped significantly as repressive and preventive measures targeted urban youth in the most violent municipalities, driving the share of homicides in rural areas to almost two thirds of total homicides by 2017.

By 2018 homicides in urban areas (57%) were again higher than in rural areas (43%) (Infosegura 2019), and El Salvador's homicide rate remained the highest in the world (World Bank 2022a). This highlights the limited progress in addressing root causes of violence by creating employment and education opportunities for the most vulnerable youth and ensure inclusive development for the poor (Dudley et al. 2018, IDMC 2018: 15-18; Knox 2019; Martínez-Reyes and Navarro-Pérez 2020: 34). Currently, under a new full war against gangs the homicide rates have dropped to 7,8% per 100.000 inhabitants in 2022 (Ministry of Justice and Public Security of El Salvador 2022).

Gang-related violence is thus a key fragility challenge, and government responses have failed so far to reduce it in a sustained manner. Repressive *mano dura* (iron-fist) approaches caused restructuring of gangs, bred more violence and increased pressure on the population of gang-controlled areas. Gangs' political influence on elections and local politicians limit the impacts of government efforts to provide opportunities for the most vulnerable youth.



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Socio-economic and demographic context

Migration and dependency on remittances

Massive migration is a defining demographic feature of El Salvador. The El Salvador's demography was transformed through displacement, urbanisation, and out-migration during and after the civil war, which lasted from 1980-1992 (Gammage 2006). In 2018 there were almost 1.4 million immigrants from El Salvador living in the US, representing one-fifth of El Salvador's population and accounting for the second-largest Latin American group in the United States, after Mexicans (Menjívar and Gómez Cervantes 2018). Next to violence, another major cause for migration is food insecurity in the country (Hallet 2019). Migration and drops in the fertility rate in El Salvador arrested the growth of its population which reached 6.5 million in 2021. With increasing urbanization, the share of the rural population fell from 56% to 26% between 1980 and 2021, but its actual size was the same in 2019 like in 1960. In contrast, the urban population more than quadrupled between 1960 and 2020. (World Bank 2021c). Median age is 27.6 years (UNDP 2020b).

Remittances represent the second largest source of external income after exports (World Factbook 2021). In 2019 migrant remittances amounted to 21% of El Salvador's GDP. Remittances have been a key factor in the reduction of poverty and overall inequality, but also increase relative inequality between remittance-recipients and non-recipients in the lower income quintiles incentivizing some to capture through violence the re-mittances they lack for a similar standard of living (Zinecker, 2017:35).¹¹ In addition, remittances are a factor in perpetuating low economic growth, limiting income and employment opportunities, deterring investment, and pushing many to migrate, in a seemingly unending vicious circle of remittances, violence, low-growth and migration.

¹¹ The increased relative inequality created by remittances in the lower income quintiles is not captured by the Gini coefficient. According to Zinecker (2017:35) those who migrate and the perpetrators of violence both belong for the most part to the poorer middle strata in the second and third quintiles and remittances define who has a better standard of living. Some in those quintiles capture through violence the remittances they lack for a similar standard of living. Thus: "migrants end up funding...violent crime with their remittances...On the other hand the financial influx from remittances is ultimately swallowed up by the costs of the violence...the most disastrous lose-lose situation which it is possible to imagine." (Ibid: 36).



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El Salvador's dependence on remittances has created an economy dominated by services and the informal sector, with significant gender differences in the employment structure. In 2019, remittances represented 21% of GDP. Services contributed almost 70% of GDP, industry¹² around 25% and agriculture just 5% (Central Bank). In 2018, of those employed: 32% worked in commerce, hotels and restaurants (22% of men and 45% of women); 18% in agriculture (25% of men and 3% of women); 16% in manufacturing (14% men and 17% women) and construction (10% men and less than 1% women) (DIGESTYC, 2019). However, of those working in non-agricultural sectors, 57% of men and 72% of women were employed in the informal sector in 2017 (OIT, 2020:99).

In 2019, participation in the labour force of men was 80% but only 50% for women (World Bank 2022c and 2022b). In 2014, Labour participation for remittance-recipient women was 25% lower than for those who do not receive remittances; in contrast, the equivalent reduction for men was only 6% (Souza & García-Suaza, 2018). El Salvador ranked 124 on Gender Development Index in 2018 - before Honduras (132), Guatemala (126) and Nicaragua (126), but well behind Costa Rica (68) and Panama (69) (UNDP 2020a).

¹² This comprises mining, manufacturing, construction, electricity, water, and gas.

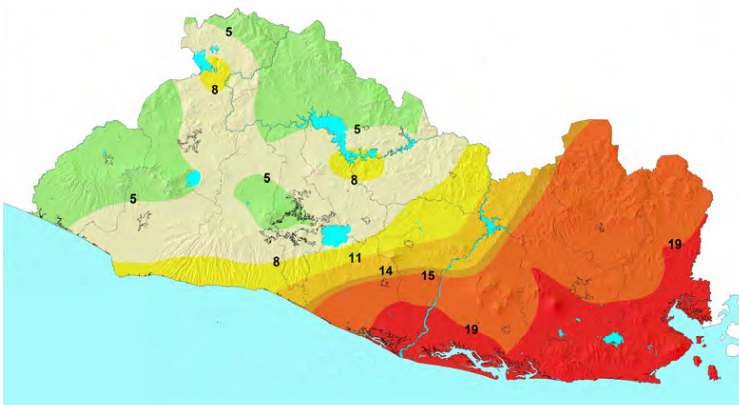


CLIMATE CONTEXT

Current climate

The poor distribution of irregular rain, recurrent droughts, environmental degradation, and low crop yields make El Salvador a high vulnerable country to climate change (USAID 2017). El Salvador is not hydro-scarce but suffers from water scarcity during dry periods. It's geography is dominated by a region known as the Dry Corridor, which spans over the countries of the so-called Northern Triangle, El Salvador, Guatemala and Honduras. It is an geographic zone with homogeneous agroclimate, ecosystems and livelihoods characterized by recurrent drought and heavy precipitation events that lead to flooding and landslides (USAID 2017). Despite abundant precipitation, its skewed temporal and spatial distribution results in water scarcity during the dry season and wet-season dry spells.¹³ Wet-season dry spells turning into drought are more frequent and occurred every year during 2012-2018.¹⁴ Across the country, drought strength varies significantly (MARN 2018). For instance, during 11-29 August 2015, Eastern and Centre-South El Salvador experienced a strong drought (light and strong red in Figure 3). At the same time, the rest of the country experienced no drought (green), a weak drought (light brown) or a moderate drought (yellow, orange in Figure 3) (MARN 2016).

Figure 3 | El Salvador: Consecutive dry days, August 11-29, 2015. (Source: MARN, 2016)



¹³ Long-term average annual precipitation is more than half that of Colombia, the country with the highest precipitation in the world (FAO AQUASTAT 2015a and 2015b), but in the four driest months (December to March) during 1980-2010 average total precipitation was just 1.5% of annual precipitation average (28 mm out of 1,848 mm) (MARN, 2013).

¹⁴ Five were strong, one moderate, and one weak. When dry spells exceed four continuous dry days, a weak meteorological drought is declared, becoming moderate with over 10 or strong above 15 continuous dry days (MARN 2018).

El Salvador's terrain is mostly mountainous with a narrow coastal belt and a central plateau (World Factbook 2021). Due to its mountainous topography, with elevations up to 2,730 m, there is geographic variability in temperature and precipitation, despite the country's small size (USAID 2017). The country lies in the path of both Atlantic and Pacific tropical storms that have increased in both frequency and intensity in recent decades. Severe deforestation and land degradation, as a result of coffee and cotton farming in the 19th and 20th century, have negatively impacted agricultural lands. Only a fraction of the country's historic forest cover remains, increasing the country's vulnerability to climate variability and change (USAID 2017).

El Salvador's 307 km Pacific coastline is already experiencing rising sea levels. It is expected that 10-28 per cent of the country's coastal zone territory will be lost by the end of the century (USAID 2017). Coastal areas, home to over 30 per cent of the population, are highly vulnerable to the combination of sea level rise and El Niño events. Even more, El Salvador is not only highly susceptible to hurricanes but also frequently experiences earthquakes and volcanic activity, sometimes leading to the destruction of infrastructure (MARN 2018 and USAID 2017).

Loss and damage caused by weather-related extreme events

Low E96 (November 2009) - a 6-hour precipitation record - damaged coffee areas in central El Salvador, while water surges in rivers collapsed 24 bridges and damaged another 55. It also triggered a landslide that buried dozens of families; and a massive surge in a river downstream washed away a settlement in the city of San Vicente. The total damages were estimated at almost USD 315 million or 1.4 % GDP, with over 60 % being public property (CEPAL 2010a).

Tropical Storm Agatha (May 2010) - a 24-hour precipitation record - destroyed an international bridge connecting with Guatemala over the Paz River, while damaging 24 other bridges in El Salvador. The total damages were estimated at USD 112 million or almost 0.5 % GDP, with over 70 % being public property (CEPAL 2010b).

Tropical Depression 12E (October 2011) broke all precipitation records for a single event: duration (10 days); total rainfall over the national territory (767 mm) or 41% the annual average for 1981-2010; peak rainfall (1,513 mm) at a specific location. Its impact was magnified because it also affected Honduras and Guatemala, and a large percentage of the rainfall collected in the Honduran and Guatemalan portions of the three transboundary watersheds ended up in rivers of El Salvador, triggering major flooding, collapsing 8 bridges, damaging another 26 as well as 40% of the road network. In addition, it caused significant destruction of agricultural crops, housing and family assets (GOES-CEPAL 2011).

Extreme precipitation events (more than 100mm in 24 hours plus more than 350mm in 72 hours) increased in frequency, as well as those triggered by Pacific cyclones and depressions (Table 1). Neighboring countries shield El Salvador from Atlantic cyclones, but Pacific tropical cyclones and depressions strike the country directly. Paul (1982), the first recorded Pacific cyclone that struck El Salvador triggered a landslide burying hundreds of families. After Mitch (1998), “deadliest Atlantic hurricane since 1780” (McCown, 1999), the most destructive precipitation events originated in the Pacific: Low E96 (2009), Tropical Storm Agatha (2010), and Tropical Depression 12E (2011), causing 6% of GDP in loss and damage (GOES-CEPAL, 2011:15). Both, hurricane Mitch in 1998 and earthquakes in 2001 were factors contributing to increased emigration to the United States in the 1990s and 2000s (World Factbook 2021).

Table 1| El Salvador: Extreme precipitation events, 1962-2011. Duration of event (days), accumulated and peak precipitation (mm). (Source: MARN 2013)

Decade	Month/Year	Atlantic	Pacific	# days	Accum	Peak
1962-1971	Sept/1969	Francelia		4 days	210mm	364mm
1972-1981	Sept/1974	Fifi		4 days	275mm	461mm
1982-1991	Sept/1982		Paul	4 days	276mm	676mm
	Oct/1982	Joan		5 days	178mm	331mm
	Sept/1993	Gert		5 days	198mm	390mm
1992-2001	July/1996	Cesar		5 days	199mm	365mm
	July/1997		Andrew	5 days	289mm	530mm
	Oct-Nov/1998	Mitch		7 days	472mm	861mm
2002-2011	Sept/2002	Isidore		5 days	160mm	285mm
	May/2005		Adrian	5 days	195mm	418mm
	Oct/2005	Stan		6 days	424mm	805mm
	May-Jun/2008	Alma		4 days	250mm	450mm
	Nov/2009		Low E96	3 days	248mm	483mm
	May/2010		TS Agatha	8 days	274mm	672mm
	Jun/2010	Alex		5 days	180mm	375mm
	Sept/2010	Matthew		8 days	325mm	603mm
Oct/2011		TD-12E	10 days	762mm	1513mm	

Climate projections

Climate projections show increased temperature and rainfall variability. For 2021-2050 projected monthly temperatures increase 1.0 - 1.2 °C under the IPCC RCP 2.6 scenario and 1.3 - 1.6 °C under RCP 8.5.¹⁵ For 2071-2100, increases are 1.3 - 1.6 °C under RCP 2.6 and 3.5 - 4.4 °C under RCP 8.5 (MARN, 2018). Precipitation declines under both scenarios, as the dry season becomes drier and the wet season less wet, more significantly under RCP 8.5 for 2071-2100. This would reduce average annual precipitation, albeit from a relatively abundant position. Seasonal variation, on the other hand, is a more worrisome aspect, particularly in the transboundary Lempa watershed. Under the most pessimistic scenario, temperature rise and reduced precipitation in that watershed, electricity generation is projected to be reduced by 41% in 2050 and 71% in 2100 from the 1961-1990 baseline (Beteta & Samaniego 2012).¹⁶

Projected impacts of rising temperatures on agriculture are significant. El Salvador has the largest share of area suitable for growing coffee in terms of agroecological zones of any Central American country and a temperature rise of 1.9°C by 2050 could decrease coffee production areas by 30% (Fernandez-Kolb et al, 2012). Maize, vital for food security, has lower yields in areas with higher mean temperatures: below 2 tons per hectare in the departments with 26-28 °C mean temperatures against 2.9-3.3 tons per hectare in those departments with lower 22.5-24.0 °C mean temperatures (Caballero, 2014).

The infographic below gives an overview of projected climate impacts for El Salvador.

Climate projections: El Salvador



Projected temperature increase of 1.3°C - 1.6°C by 2050



Increased incidence of extreme weather, including droughts, tropical storms and floods



18 cm rise in sea levels by 2050

Key climate impacts:

Agriculture

- Crop loss/failure
- Declining yields of staple and export crops
- Increased incidence of pests and diseases



Water

- Increased water stress
- Increased flooding
- Decreased water quality



Human Health

- Food insecurity and chronic malnutrition
- Increased risk of waterborne diseases and expanded range of vector-borne diseases



Ecosystem

- Biodiversity loss
- Land degradation and erosion of mountains
- Reduced fish stocks and mangrove habitat



Energy and Infrastructure

- Destruction and damage of roads, buildings, bridges and ports
- Disruption of energy services



© adelphi based on USAID 2017 and IPCC RCP 2.6 scenario

¹⁵ The representative concentration pathways or RCPs were used by the Intergovernmental Panel on Climate Change for the 2014 Fifth Assessment Report (AR5). RCP2.6 represents the most optimistic and RCP8.5 - the most pessimistic scenarios (IPCC 2014).

¹⁶ This study uses the A2 scenario from the SRES scenario set previously used by the IPCC in the Third Assessment Report (Special Report on Emissions Scenarios - SRES). See Hausfather 2019.



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POLICY AND INSTITUTIONAL CONTEXT

The Ministry of Environment and Natural Resources (MARN) is responsible for climate policies in El Salvador, and for the systematic observation on natural hazards, including extreme weather. In the aftermath of the November 2009 extreme precipitation event, MARN developed an advanced integrated multi-hazard monitoring centre for early warning and disaster risk reduction. To better respond to droughts, capacities were reinforced to include soil and leaf moisture monitoring in real time.¹⁷ MARN also developed synergistic climate change adaptation and mitigation initiatives, including the first REDD+ program in the world with adaptation as an entry point under an adaptation-based mitigation approach. The program falls under the umbrella of the National Landscape and Ecosystem Restoration Plan (PREP, 2012) that focuses on agriculture, given its dominant role in land use and the fact that land degradation magnifies the impacts of extreme weather events, affecting other sectors beyond agriculture.

Since mid-2009, MARN pivoted its climate change communication strategy to highlighting climate variability and impacts of extreme weather, recognizing that slow-onset phenomena and their impacts are less easily grasped by politicians, ministers, mayors, business leaders, journalists, and the population at large.¹⁸ On World Environment Day 2011 (June 5), MARN launched a year-long public consultation for a new National Environmental Policy that proposed “to reduce environmental degradation and vulnerability to climate change”. A year later, the Council of Ministers approved the new environmental policy (NEP).

¹⁷ The center operates 24/7 and more than 380 stations - including 8 radars - feed it with meteorological, hydrological, oceanographic, seismic, volcanological, as well as soil and leaf moisture data (MARN, 2019).

¹⁸ Disclosure: The author was Minister of the Environment and Natural Resources from June 2009 until May 2014.

NEP and PREP provided the framework for the 2013 strategies on climate change, biodiversity, water, and sanitation, as well as for international engagement on climate change and biodiversity, including the Bonn Challenge since 2011, and the UN Decade on Ecosystem Restoration 2021-2030. El Salvador proposed the latter in September 2018; and the UN General Assembly adopted it on March 1, 2019. Reinforcing efforts by MARN, the Legislative Assembly reformed existing laws to explicitly introduce the issue of climate change.¹⁹

Building on those advances, MARN developed action plans, including a National Climate Change Plan in 2015, updated in 2018; and the Landscape and Ecosystem Restoration Action Plan for 2018-2022, which seeks to fulfil El Salvador's commitment under the Bonn Challenge, to restore 1 million hectares, or half its territory.²⁰ In contrast to other initiatives that focus on forest restoration, El Salvador's plan focuses almost entirely on advancing agricultural transitions (Table 2), to climate-proof various agricultural sub-sectors while enhancing their climate change mitigation potential (MARN 2017).

Table 2| Table 4. El Salvador: Transition priorities in the Landscape and Ecosystem Restoration Action Plan. (Source: MARN 2017).

Transition type	Thousands ha	%
To basic grains agroforestry system	354.7	28.9%
To intensive silvo-pastoral system	330.8	26.9%
To cacao agroforestry system	322.6	26.3%
Coffee plant stock renovation	123.8	10.1%
Green sugar cane harvest	74.6	6.1%
To riparian forest	21.4	1.7%
Total	1,228.0	100.0%

Regarding arrangements for climate finance, in 2018 a technical committee integrated by MARN, Ministry of Finance and Central Bank, developed a proposal to create a “National Fund for Climate Change Adaptation and Climate Risk Reduction” (MARN, 2018). However, the proposal did not gain traction, possibly influenced by lesser expectations regarding climate finance, and the priority given to other areas.

Later on, in 2020, the Council of Finance Ministers of Central America, Panama, and the Dominican Republic (COSEFIN), a body of SICA (Central American Integration System) launched a capacity building initiative to include disaster risk reduction and climate change adaptation measures in the complete life cycle of public investment projects (ECLAC 2020).²¹

¹⁹ A May 2011 General Education Law reform mandated the Ministry of Education to promote the study of ecological risk management and climate change adaptation and mitigation in all the education levels. A parallel Higher Education Law reform ordered universities to expand their curricula to include climate change as an area of study. The October 2012 reform of the Environmental Law introduced a new chapter on climate change that ordered all state institutions, including municipalities, to respond in an urgently, adequate, coordinated and sustained manner to the negative impacts of climate change.

²⁰ During the UNFCCC COP 18 (Doha, December 2018), contingent on adequate international support

²¹ The initiative is supported by the Swiss Agency for Development and Cooperation, and will be implemented with the technical support of the UN Economic Commission for Latin America and the Caribbean (UN ECLAC) (ECLAC 2020).



International support is yet not up to the challenge. During 2011-2015, El Salvador spent US\$1,179 million to address climate change, three quarters for adaptation, loss and damage; and one quarter for mitigation; but external grants funded less than 5% of those expenses (Rodríguez Rojas et al., 2018). High expectations regarding grant climate funding have fallen short, as exemplified by a recent project approved by the Green Climate Fund, where actual funding was about one quarter of original expectations, forcing a significant reduction in the project ambition, and hence in its transformational impact (GCF 2018 and FAO in El Salvador 2018).²²

²² The reference is to the project “Upscaling climate resilience measures in the dry corridor agroecosystems of El Salvador” (RECLIMA). funding approved by the Green Climate Fund in October 2018 was US\$35.8 million (FAO, 2018).



FRAGILITY RISKS

As the IPCC has recognized in the Sixth Assessment Report, additional pressures brought on by higher levels of warming will increase vulnerability and the risk of violent intrastate conflict, especially in places characterised by a history of violence, marginalisation, exclusion and weak governance (IPCC 2022). It does so by exacerbating or multiplying existing threats to human security, including food insecurity, unsafe migration and economic instability. In El Salvador, these issues are already of concern and may thus increasingly become drivers of instability or conflict.

There are multiple ways how climate change exacerbates conflict risks and those differ between regions and contexts. Rüttinger et al. (2015) identified seven compound risk clusters: 1. Local resource competition, 2. Livelihood insecurity and migration, 3. Extreme weather events and disasters, 4. Volatile food prices and provision, 5. Transboundary water management, 6. Sea-level rise and coastal degradation, and 7. Unintended effects of climate policies. These findings have been replicated since various policy reports and speeches frame climate change as a “threat multiplier” that will make existing problems more intractable (Rüttinger et al. 2015; Brown 2020). In fact, in many regions around the world climate security risks are already visible today and undermining societies’ abilities to adapt to future impacts from climate change (adelphi and PIK 2020).

In El Salvador, climate change does exacerbate existing insecurities and increases the risks of conflicts (CGIAR 2021). El Salvador is a highly fragile context, and two main links between climate change and the possibility of increased human insecurity emerge from the literature. First, growing climatic pressures on agricultural systems, such as drought, loss of land and desertification impacting food security, can drive unsafe migration, compounding the risks of poverty and violence (see section 3.1.). Second, the financial impacts of climate change can further weaken the resilience capacities of the Salvadoran society, making it even more challenging to adapt to the pressures of interrelated stressors of migration, poverty and violence (see section 3.2.). Together, these two risk pathways form a vicious circle driven by violence, migration, stark dependency on remittances, loss of labour force, low education outcomes and lack of economic opportunities, especially for young people. If these risks are not mitigated, climate change will make it even more challenging to break the vicious circle.

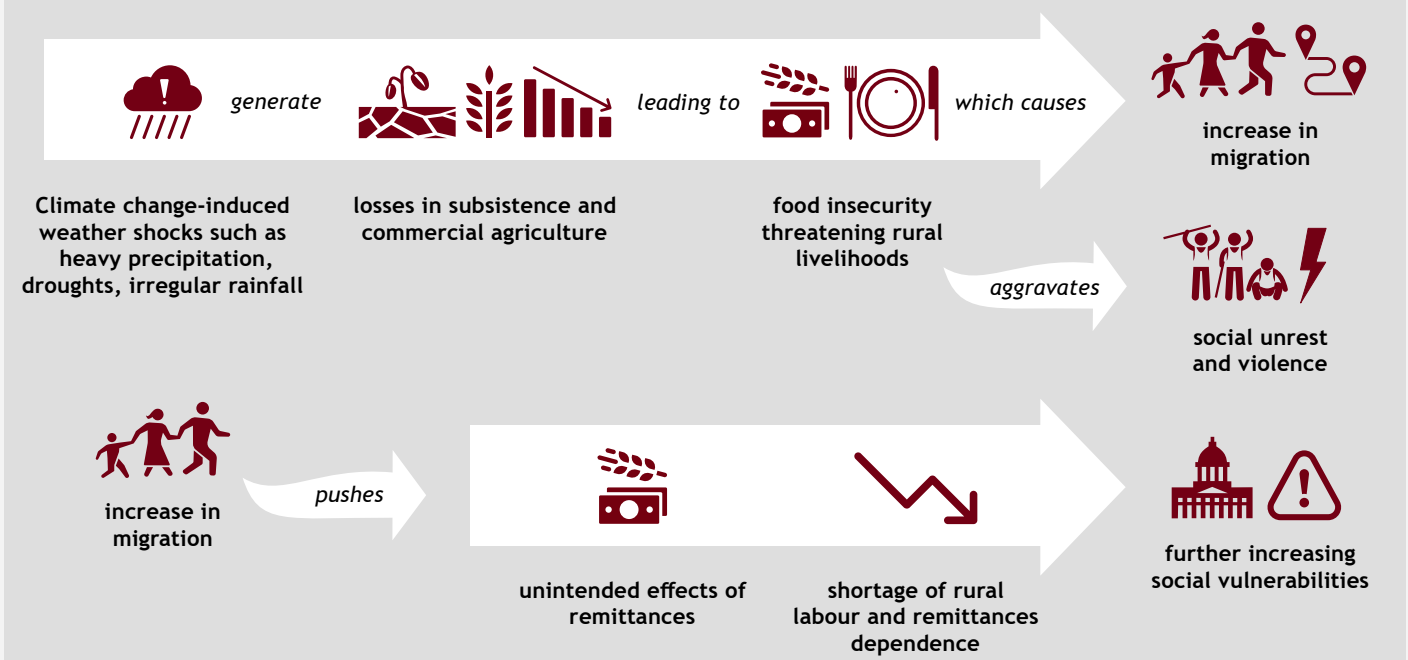
Climate change is likely to compound the nexus of migration, poverty and violence

People migrate for many reasons. Most people migrate abroad for work, family, or study-related reasons. However, many people are forced to leave their homes and countries by acute risks such as violent conflict and environmental hazards. Others migrate to improve their livelihood or escape overlapping structural or slow-onset issues, such as poverty, environmental degradation and food insecurity (IOM 2019; Morales - Munoz et al 2020). The literature shows that climate change influences migration, mainly in dryland conditions, with food insecurity as a mediating factor. Hunger and vulnerability are likely to increase in drylands due to climate change and environmental degradation, including land degradation, increasing rainfall variability, chronic water shortages, and an increased frequency of droughts (Neumann 2015).

Migration has been shaping the society and economy of El Salvador for decades and its extraordinary scale has been generating macroeconomic and social challenges (see chapter 1). Many Salvadorians have migrated in recent years, mainly to the United States. In 2018 “nearly 1.4 million immigrants from El Salvador, representing one-fifth of its population, accounted for the second-largest Latin American group in the United States, after Mexicans” (Menjívar and Gómez Cervantes 2018).

Migration drivers in El Salvador are diverse, complex and also create feedback loops with each other (WFP 2017). El Salvador’s most commonly recognized migration drivers are economic motivations, such as the household’s wage level, and most people report the lack of economic opportunities as a key reason for migration (World Vision 2014, Emif Sur 2019: 25; CRS 2019). Variables like social capital (trust and family networks) in the destination country facilitate the decision to migrate. However, more recently, violence, victimization and fear of crime has had a stronger impact on the decision to live or work abroad (Cutrona et al. 2022). In addition, emigration peaks, as captured by statistics, are determined by natural disasters, climatic shocks and socio-economic conditions (WFP 2017). Slow-onset phenomena can also exacerbate migration pressures in El Salvador as the climate changes. Qualitative research in rural coastal areas in western El Salvador show that salinization and marine ecosystem degradation can drive migration (Ramos & Yanes 2018).

Increasing risks: growing climatic pressures can drive migration, compounding the nexus of migration, poverty, and violence



By interacting with migration drivers, climate change is likely to compound the nexus of migration, poverty and violence. Future climate change impacts could contribute to migration pressures through influencing the different drivers individually and by affecting their interrelations. Interviews conducted by the IOM at municipal level indicated natural disasters²³ and climate change among the reasons for migration (IOM 2016: 10). The most prominent migration drivers affected by climate change are poverty, unemployment, reduced agricultural productivity, droughts and pests that result in crop losses (WFP 2017). For instance, the lack of economic opportunities could be exacerbated by climate risks to key economic sectors, such as agriculture. More extreme weather, such as heavy precipitation, droughts or irregular rainfall generate large losses in subsistence and commercial agriculture, threatening rural livelihoods, and act as a push factor for migration (Cohn et al. 2017).

The literature shows that climate change and environmental degradation affect food security, an intermediate variable that exacerbates motivations to migrate and social unrest (Raleigh et al. 2015; Morales-Muñoz et al. 2020). El Salvador illustrates this pathway. While data on reasons to migrate is not comprehensive for El Salvador, several studies support the assumption that pressure on rural livelihoods, especially food insecurity, contributes to migration (Hallett 2019). Also, different reports support the claim that the larger proportion of new migrants to the U.S. in the last decade come from rural areas. The Atlas of Migration in Northern Central America highlights that 64 per cent of deported unaccompanied Salvadoran minors came from rural households in 2016 (ECLAC 2018: 21). Salvadoran participants in WFP household studies (2004-2016) mentioned food insecurity, drought, and pests as reasons for emigration (WFP 2017: 34-35). Central American migrants returned by Mexican authorities increasingly came from rural areas. They were employed in agriculture (Ibid: 29), while precipitation deficits accompanied increased apprehensions of migrants from all three Northern Triangle countries, including El Salvador (Ibid: 8). Furthermore, according to quantitative analysis from CGIAR (2021) using agricultural-related indicators (income from agriculture) and the number of unemployed youth mediated the interface between climate (El Niño Southern Oscillation- ENSO and mid-summer drought) rural-urban migration and conflict events at municipality level, explained by a low opportunity cost to join criminal groups.

Diferent examples show how climate change is affecting agricultural production, food security and out-migration in the country. First, subsistence farmers are losing their essential crops. Salvadorean small farmers grow maize and bean - essential staple foods for food security - in two crop cycles, before and after the mid-wet season dry spells. The first crop (primera) is highly vulnerable to drought, and the second (postrera) can be impacted by excess rain, leaving many farmers in need of food assistance, as in 2014, 2015, and 2018. In 2014, almost two-thirds of basic grain producers registered crop losses, and 82% of those affected by drought in eastern El Salvador reported total loss (OCHA, 2014). In 2015, drought and irregular rainfall destroyed 60% of the maize crop (FAO, 2016). In 2018, a delayed wet season ruined up to 70% of the first crop (primera) of subsistence farmers in the Central American Dry Corridor and excess rainfall damaged up to 50% of the second crop (postrera) (FAO 2019). A second illustration is the coffee rust crisis in 2012 and 2013. At the time, the combined effects of climatic factors such as rising temperatures and the El Niño phenomenon, the rust outbreak and the decline in global coffee prices limited food availability and access for many rural poor households (FEWS NET 2016, WFP 2017).

²³ For example, during 1995-2000, migration from El Salvador to the U.S. spiked relative to the previous five-year period (Cohn et al. 2017), likely in part as a response to Hurricane Mitch (1998). In contrast, during 2000-2005 there was a sharp drop that seems related to the 2001 earthquakes Halliday (2006), based on panel data of rural Salvadoran households 1997, 1999, and 2001, argues that earthquakes discouraged migration as households retained members at home or brought members back to help in recovery and the depletion of household's financial resources which prohibiting them from sending members abroad.



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Similarly, frequent droughts since 2012 have driven migration from rural areas.²⁴ A possible indicator of extreme weather events driving migration is the differentiated weight of remittances when compared with impacts of extreme weather across El Salvador. In La Unión where droughts are strongest, the share of remittance-recipient households rose from 40% in 2000 to 47% in 2018. In San Vicente, hardest hit under Low E96 (November 2009) by extreme precipitation, it went up from 20% in 2000 to 31% in 2018. Usulután, whose coastal plains are flooded under heavy precipitation, also reports the largest area of maize damaged by droughts since 2012 at the department level. According to surveys from the Ministry of Agriculture, here the share of remittance recipient households went up from 31% in 2000 to 34% in 2018 (DIGESTYC. Encuesta de Hogares de Propósitos Múltiples, 2018).

From another perspective, structural inequality and lack of social capital are key variables that explain how climate change impacts may lead to migration. Both have been impacted by long-term violence and conflict (Tellman et al. 2014). Inequality has historically been prominent in El Salvador. It has been found that inequality and lack of trust are strong predictors of climate-induced conflicts because the social networks that support communities to overcome weather-related events are weakened, and communities cannot protect their assets or recover from losses, further exacerbating inequality and creating social tensions. In other words, climate-induced inequality strongly increases the risk and intensity of conflicts and migration (CGIAR 2021).

It is vital to address that phenomena such as immobility and short-distance migration are also present in El Salvador and its related to persistent inequality. The poorest families and communities, that lack social networks and resources to send family members to migrate, cannot use remittances as an adaptation strategy (Schade et al. 2016). Only populations with a higher income and social networks at the point of destination, as opposed to the most vulnerable and extremely poor, can migrate to diversify their livelihoods. Thus, it exacerbates the vulnerability of lower-income rural populations. In other cases, migration as an adaptation strategy can be unsuccessful because of the prevalence of structural causes of low resilience to climate risk and food security, such as access to land and lack of capacities to turn remittances into increased agricultural production (Morales-Muñoz et al. 2020).

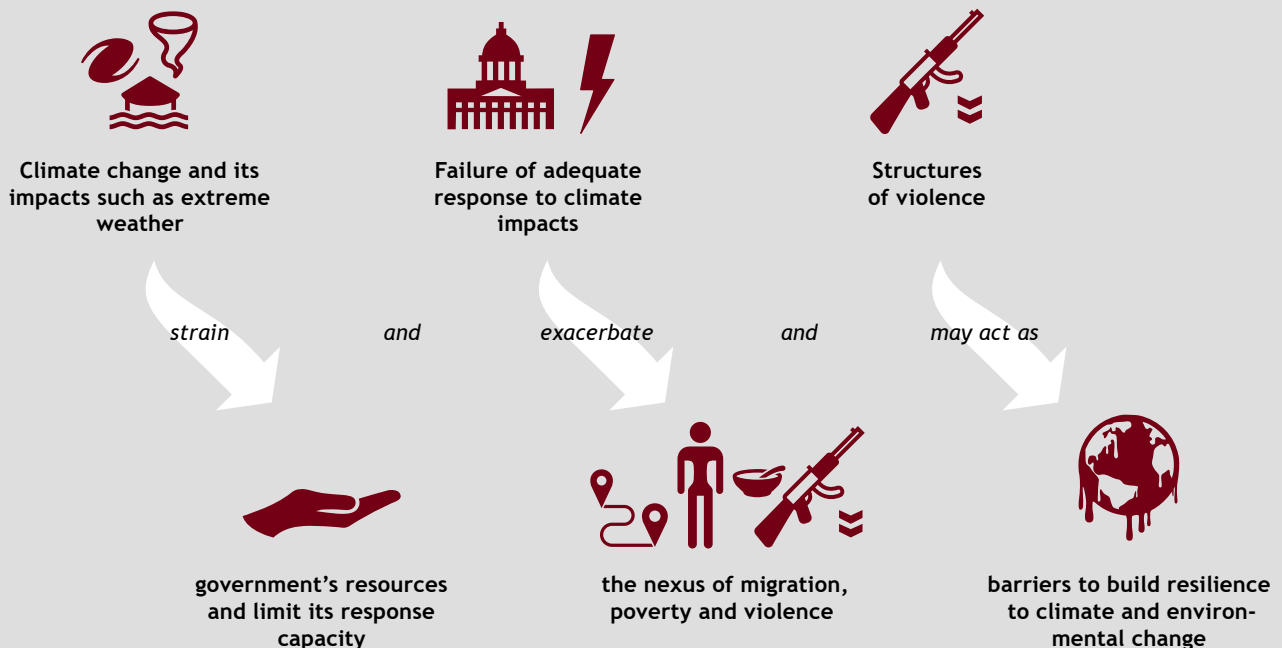
²⁴ Household surveys show a faster growth of rural remittance-recipient households after 2012. This would confirm that a larger proportion of new migrants to the U.S. in the last decade come from rural areas. It is also consistent with Halliday's analysis that in the absence of agricultural shocks the probability of a rural household sending members abroad decreases by 24% (Halliday, 2006). Recent reports support the claim that the larger proportion of new migrants to the U.S. in the last decade come from rural areas. Across Central America, the departments affected by emigration tend to be rural, poorer and dependent on agriculture.

Weakening state capacity to advance adaptation and disaster risk reduction could exacerbate underlying conflict drivers

Extreme weather shocks reduce the capacity of the economy to recover from other shocks. El Salvador is prone to natural disasters and has taken heavy tolls, such as infrastructure damage from Hurricanes. Loss and damage from three Pacific storms during 2009-2011 (Low E96, Tropical Storm Agatha, and Tropical Depression-12E) was equivalent to 6 percent of GDP. In 2009, the combined effects of Hurricane Ida and a low-pressure system off the Pacific coast caused damage and losses equivalent to 1.1 percent of GDP, in 2010, the tropical storm Agatha led to a 0,5 % loss; and in 2011, the tropical depression 12E resulted in a 4 % loss of GDP, as compared to the previous year (UN 2010 and CEPAL 2018). Due to its high vulnerability to natural disasters and the need to cope with the aftermath, El Salvador must ensure budget availability on disaster prevention.

These weather shocks, together with low rates of domestic investment and low competitiveness, held back the recovery of the Salvadoran economy after the financial crisis of 2008-2009 (IMF, 2013:14). Public debt rose from 42.4% of GDP in 2008 to 69.8% in 2018 (IMF 2019). The response to the Covid-19 pandemic increased public debt even more (about 85% of GDP in 2021) (IMF 2021), leaving little room for funding climate change adaptation and risk reduction initiatives and expenditure in health and education. This diminishes the government's capacity to respond to the complex nexus of poverty, low economic growth, migration and violence. Weather shocks divert resources to fund emergency response and rehabilitation, leaving little room for adaptation, risk reduction initiatives and social expenditures aiming to tackle inequality. For example, providing opportunities to vulnerable strata of the population and a fostering environment to vulnerable youth (OECD 2017) becomes even more challenging. (Calvo-Gonzalez and Lopez, 2015).

Decreasing resilience: the impacts of climate change can further deteriorate response and governance capacities



Vulnerable populations struggle not only with poverty but also face stronger violent threats by criminal groups and face multiple barriers to building resilience to flooding and landslides (Hardoy and Pandiella 2009: 210). Failure to respond appropriately to climate impacts, such as more frequent and intense disaster and slow-onset degradation of the environmental foundations of livelihoods, could exacerbate the nexus of migration, poverty and violence by further eroding social trust and cohesion. A qualitative community-level study conducted in El Salvador finds that “the aftermath of a disaster can become a tipping point or a pathway to introduce violence into an already vulnerable community” (Tellman et al. 2014). Conversely, social capital of communities has been key to resilience in El Salvador as shown in the aftermath of the 2009 Low E-96/Ida (Ibid).

At the same time, structures of violence themselves might be a paramount barrier to build resilience to climate and environmental change. The presence of non-state armed groups affects the operations of businesses, international organisations and civil society, undermining efforts for sustainable development (Martínez-Reyes and Navarro-Pérez 2020: 30, 45 and Bradley 2020).²⁵ Violence reduces the ability of disaster response in communities and fosters migration. In turn, migration, “serves as a catalyst for gang violence and influence” (Tellman et al. 2014 P:18). Further, gang activities may hamper economic development in general. As a consequence, more youth may join such gangs due to a lack of alternatives, creating a continuous non-linear feedback cycle (Tellman et al. 2014).

Tackling the root causes of violence in El Salvador requires increased public investment in improving marginalised population groups’ situation, including providing education, employment opportunities and social safety to vulnerable youth (OECD 2017). This, in turn, depends on the increased productivity of the economy. Furthermore, stronger public institutions are indispensable to counteract fragility. Growing and more recurrent climatic stresses decrease the likelihood of progress along all these dimensions.

It is important to pay attention that climate resilience programmes could trigger unintended consequences if the security challenges and underlying conflict dynamics are not integrated into planning, e.g. exacerbating local conflicts or providing additional resources to gangs. In humanitarian aid, for instance, the resources may end up in violent structures, such as gangs, enabling them to strengthen their structures. Ways in which aid may be misused by non-state armed actors include pressure on or harassment of the aid’s beneficiaries to relinquish part of the aid they have receive (Perrin 1998).

Therefore, understanding how climate and conflict resilience can be built simultaneously to avoid further deterioration of the security situation across Central and North America requires a deeper integrated analysis that is likely to focus on the needs of the most vulnerable populations and tackle factors of historically entrenched marginalisation patterns.

²⁵ Extortion by gangs, estimated at \$400 million a year has been affect local businesses or to endanger rural proTducers (e.g. Dudley, Avalos & Martínez 2018; Bhawe 2019; Clavel 2019; Farah and Babineau 2018: 66).

El Salvador is caught in a vicious circle of violence, migration and poverty building a context of social fragility in a country highly vulnerable to climate change. Prolonged violence has been a driver of poverty and migration, which has created a state of fragility. Increased extreme weather-related events impacting agriculture and food security affect livelihoods compounding and triggering rural migration. Migration has decreased the labour force and created a stark dependence on remittances, which have been unable to drive adaptation to agricultural production or tackle structural poverty, further increasing vulnerabilities, lowering resilience capacities and exacerbating drivers of violence. Thus, interacting with migration drivers, climate change is likely to compound the nexus of migration, poverty and violence.

The vicious circle





ENTRY POINTS FOR ADDRESSING CLIMATE FRAGILITY RISKS

➔ **Assess climate and security risks to address root causes of climate vulnerability, migration and conflict in a coordinated manner**

The role of climate change in contributing to the underlying factors of gang violence in El Salvador has not been researched systematically. However, there are several indicators that climate change might be a compounding factor, making addressing the root causes of violence even more difficult. This challenge has an international dimension as the gangs streamline their operations and increasingly participate in international structures of organized crime and as violence drives emigration.

El Salvador confirms that there can be no lasting social peace without inclusive development to address the root causes of violence and migration, cut excessive dependence on remittances and strengthen political institutions. Successful strategies to confront violence should target the needs of marginalized populations, providing education, security, and economic opportunities. Furthermore, institution-building is essential to combat corruption and increase trust in the political system, police forces, and central and municipal governments.

However, development can only be sustained by urgently addressing climate-fragility risks. Understanding how climate and conflict resilience can be built simultaneously to avoid further deterioration of the security situation requires deeper analysis and actions likely to focus on the needs of the most vulnerable populations and tackling factors of historically entrenched marginalization patterns. There is a need to research how the success of comprehensive measures required to address the deep-rooted violence may be affected by the impacts of climate change on the economy and society.

As economically vulnerable populations tend to be more vulnerable to impacts of climate change and environmental degradation in both rural and urban areas, these factors need to be considered when devising strategies to reduce violence, ensuring that they are climate-proof, or better still that they advance resilience and climate change adaptation and mitigation goals. Vice versa, the challenges that pervasive violence and constraints pose to resilience building in territories under the control of non-state armed groups need to be analyzed thoroughly. Climate security assessments and actions can help improve programming to reduce violence, build resilience to climate change, and avoid unintended adverse side effects.

Further unpacking of climate-migration nexus, as well as its complex links with poverty and violence is necessary, accounting for the differences in rural and urban contexts. The different pathways of how climate change could impact migration, poverty and violence should receive closer attention. The research to substantiate these possible interactions in El Salvador, specifically, is currently scarce. The academic community agrees that climate change impacts on human security are probably underestimated due to lack of data and methodological challenges (Detges et al. 2020), and this is applicable to El Salvador. In further analysis of climate fragility risks, territorial variation needs to be accounted for. Poverty, environmental vulnerability, and violence correlate to a varying degree with people leaving their homes in different departments of the country (Cazzuffi 2019: 45).²⁶ Notably, the migration drivers and their possible interaction with growing climatic vulnerabilities in the highly urbanized department of San Salvador deserve further scrutiny, as it is likely to vary from rural areas.

➤ **Support sustainable rural development and strong local economies to create opportunities for vulnerable youth**

Land and water mismanagement are deeply rooted in the history of El Salvador. Today, they exacerbate the country's high vulnerability to climate change, already destroying livelihoods and causing significant economic loss and damage. Although it might be thought that urbanization and migration have reduced the pressure on the land, the actual size of the rural population in 2019 was the same as in 1960, when the country was predominantly rural. On the other hand, while agriculture may seem irrelevant at the macroeconomic level - in 2018, it represented just 5% of GDP - a full quarter of men were still employed in agriculture. As violence spills into rural areas and climate shocks destroy rural livelihoods, migration from rural areas has been increasing, as has the dependence on remittances and the differentiation and relative inequality between remittance-recipient households and those that do not receive remittances. Therefore, any strategy that addresses climate risks and their compounding factors must seriously consider rural development, inclusive land planning and their socio-economic relationship with the surrounding urban areas in small towns and villages.

The overriding goal of such a strategy should be to create decent livelihood opportunities for the youth, particularly those at risk of being drawn into gang criminal activities or attracted by the option of migration, while restoring the degraded environment for increased climate resilience. Indeed, high labour-intensive restoration projects of soil and water resources can significantly improve livelihood opportunities for the rural and urban youth in surrounding areas. Furthermore, a restored rural environment can significantly benefit urban areas by reducing the risk of water scarcity and flooding while guaranteeing a steady supply of agricultural products.

²⁶ Environmental vulnerability correlates with emigration in Chalatenango, Cuscatlán, La Libertad y San Salvador (Cazzuffi 2019: 45). San Salvador and La Libertad were also among the top three origin departments of migrants returned by the Mexican and the US authorities in 2015 (FAO 2016).

Recently, in 2021, the regional program Green Development Fund for the SICA region (Sistema de la Integración Centroamericana), financed by the European Union and the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) of the Federal Republic of Germany, was launched to increase adaptability to the effects of climate change in vulnerable areas of Central America and to contribute to sustainable and resilient development in the SICA countries by supporting the implementation of national climate change adaptation and mitigation plans in the framework of the Nationally Determined Contributions (NDC) of the Paris Agreement. These investments can spur rural economic development and support resilient agrarian livelihoods.

Empirical criminological research of the last decades has confirmed that punishment may not be the best way to sustainable crime prevention (Kury 2016). After a recent open offensive of the Salvadorian government against gangs, which has successfully increased the number of gang members in prison, there is a critical challenge to sustain low crime rates and prevent the recidivism levels of criminal gang violence through successfully reintegrating ex-convicts (Dawes 2011). A plausible idea for the government's social reintegration plan for criminals and preventing recidivism is to include rural youth and ex-convicts in restoration and conservation projects that include restorative justice for victims of crime and foster intra-communal reconciliation through symbolic acts (Willems & Van Leeuwen 2014). It is especially true when the victims are women and children (Kury 2016).



➔ **Support landscape restoration through a well-sourced restoration fund to help in addressing security and climate fragility challenges in El Salvador**

Fostering sustainable agricultural transitions

The transitions seek to expand tree cover in agricultural systems, its maintenance in coffee, and foster agricultural practices that increase soil organic matter, and hence water retention capacity. This strengthens resilience and enhances carbon sinks above and below ground. Projections for 2050 show that maize yields could be reduced by one third on poor soils due to reduced water availability in the soil to sustain plant growth, but on soils with enough organic matter, and hence, good water retention, the impact would be less than 2% (Eitzinger et al. 2012: Table 1). In addition to its environmental benefits, a recent analysis highlights the positive impacts on rural job creation of this approach to landscape restoration. According to the analysis, the restoration of 386,000 ha, approximately the plan's goal for the first 5 years, would create almost 180,000 jobs benefitting the rural economy and providing incentives for rural young women and men to remain in the country with higher living standards to offset the risks associated with out migration (Rodriguez and Dreikorn, 2018: 31).

By end-2018, 122,093 ha had been brought under restoration through 227 restoration-focused projects undertaken since 2014 (IUCN 2019:18) with 60,672 ha added in 2019 summing up to 238,961 ha in 2020 (IUCN 2021) and exceeding one fifth of the 1 million hectares restoration goal. However, breakdown of areas by land use brought under restoration in 2019 shows negligible progress on areas with the greatest land degradation, such as those under basic grains, degraded pastures, as well as in those areas with better soils that were identified as being apt for the cacao agroforestry system.

Concrete progress on climate policy on appropriate scale can help break the stalemate on security and fragility challenges in El Salvador because these challenges are deeply embedded in economic and social self-enhancing negative dynamics that cannot be turned around through narrow security policies. Conversely, climate fragility challenges cannot be adequately addressed with a narrow environmental focus. Landscape restoration at a significant scale offers a powerful instrument to address both challenges, and should be the centerpiece of a comprehensive rural development strategy to ensure food, water, and livelihood security; employment generation, new opportunities, as well as climate change adaptation and mitigation (Rodriguez and Dreikorn, 2018: 31).

On-going but progressing slowly and unevenly, El Salvador restoration plan requires a more proactive strategy supported by a well-funded carefully designed fit-for-purpose National Landscape Restoration Fund. The Fund's mandate should have a clear focus on socially inclusive landscape restoration and even restorative justice and reconciliation measures that proactively open communal dialogues. Its governance arrangement should ensure relevant government participation as well as substantial, balanced high-quality participation of civil society, academia, and local actors. Fund operations need to ensure transparency and compliance with fiduciary, social and environmental standards. A credible, well-funded Monitoring, Reporting and Verification (MRV) system is key to ensure measurable results.²⁷ To design, staff and kick start the operations of the Fund, the mobilization of external donor support is essential. In addition to grant funding, additional resources could be freed up through official debt-for-restoration swaps to divert debt-service payments (principal and interest) into the Fund.

27 The Sustainability Index for Landscape Restoration, developed to monitor the environmental and socio-economic impacts of landscape restoration by WRI, PRISMA and others, could be the basis for the development of the Fund's MRV system. (Zamora Cristales, 2020)

➔ **Mechanisms how restoration and agro-ecology contribute to breaking the cycle of violence, poverty and migration.**

One of the assumptions behind building climatic resilience as a contribution to human security are related co-benefits on income growth, and social cohesion. From the social perspective, the exchange of experiences among community members in agricultural and ecological practices, such as technical approaches for land restoration, creates ownership, i.e. the feeling of belonging to a community of practice. The social networks developed in this process constitute mechanisms for protection to both, violence and to build resilience against weather-related events (Morales - Munoz et al 2021). Having an alternative to developing their livelihoods builds trust between community members and peers, enhancing social cohesion. Furthermore, when these kinds of projects proactively integrate capacity building to solve social conflicts and do advocacy, they prepare producers to use knowledge in governance and dialogue scenarios within value chains. This contributes to the inclusion of communities in markets in a fairer way and thus enhances resilience to social threats and lowers the opportunity cost to migrate (Löhr et al 2022).

➔ **Awareness raising, capacity building and institutional strengthening for climate change resilience and socially inclusive development**

For almost three decades since the end of the civil war, successive governments prioritized narrowly defined security policies that have failed to reduce violence. On a separate track, El Salvador has come a long way in terms of developing responses to the threat of climate change, yet their implementation is lagging. The most thorough assessment of climate and security risks leading to a comprehensive strategy to address them will be of little use if it is not implemented, for lack of awareness and understanding of how seriously addressing climate fragility risks can help in addressing the security challenges. Therefore, greater effort is needed to raise awareness among policy makers, social leaders and the international community on how addressing climate risks can further other objectives such as social cohesion, expanded opportunities, and economic resilience. Ultimately, these actors need to see action to address these risks as an important step to the socially inclusive development that eluded El Salvador for such a long time and has led to the current vicious circle of violence, vulnerability, migration and dependence on remittances.

Addressing climate risks and fragility factors also demand a stronger and much more capable state apparatus. The weakening of development related state capacities and functions during the civil war and post-war economic reforms have delayed the implementation of key initiatives. While there has been some recovery in the last decade, the use of the state as employer of last resort, given the low growth of employment opportunities in the private sector, has limited the scope of that recovery. Therefore, a more deliberate effort is required to strengthen those areas more closely related to the addressing of climate risks and key development functions, while conditions are created for a more substantial overhaul of the public sector.

Investing in disaster risk reduction can significantly contribute to climate change resilience and socially inclusive development. By reducing the vulnerability of communities to disasters, such as floods, droughts, and storms, disaster risk reduction measures can prevent the loss of lives, protect assets and infrastructure, and ensure the continuity of economic activities. Furthermore, disaster risk reduction measures can be used as an opportunity for capacity building and institutional strengthening, creating jobs, and generating economic growth (Ishiwata and Yokomatsu 2018). For example, implementing early warning systems, flood control measures, and resilient infrastructure can create jobs and promote economic growth in vulnerable communities. By integrating disaster risk reduction with awareness raising, capacity building, and institutional strengthening for climate change resilience, the Salvadorian communities can promote sustainable and inclusive development that benefits all members of society.

➔ **Learn from the shortcomings of El Salvador Peace Accords for peace-making efforts in other countries and to address current violence in El Salvador**

The 1980s civil war ended through ground-breaking United Nations mediated 1992 Peace Accords, the first time the UN Security Council supported mediation in an internal conflict. However, their one-sided focus on military and political reforms, while successful in ending political violence, appear now as a Faustian bargain and a cautionary tale for internationally supported peace-making efforts. By failing to address the deep-seated socio-economic and environmental issues at the root of the conflict to ensure resilient socially-inclusive development, the stage was set for rising and pervasive homicidal criminal violence, total dependence on migration and remittances, and high vulnerability to climate change. After almost three decades without political violence, relatively clean elections and the peaceful transfer of power, the failure to address the country's fundamental social, economic and environmental problems has eroded the legitimacy of political parties and electoral democracy, creating conditions for the dangerous return of authoritarianism.

Finally, a novel approach to re-integrating former gang members into society is to provide them and community members job training and employment opportunities in industries that focus on sustainable and environmentally friendly practices, such as renewable energy, organic farming, landscape restoration and sustainable forestry. Programs can target gang members and at-risk youth, providing them a path out of violence and into legitimate employment. By focusing on environmentally sustainable industries, the program would also address the issue of climate change by promoting a transition to a low-carbon economy.

In the planning and implementation process, it is critical to involve local communities, including former gang members and their families. This would help build trust and ensure that the program meets the needs of those it aims to serve. In addition to job training and employment, the program could provide counselling and other support services to help gang members transition out of violent lifestyles and provide psychological support to survivors of violence.

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