



CLIMATE CHANGE, MIGRATION
AND SECURITY IN THE
CONTEXT OF URBANIZATION IN
NORTHERN CENTRAL AMERICA

CLIMATE SECURITY MECHANISM

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Aerial view of Guatemala City. Photo by Christopher Garcia on Unsplash.

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ACRONYMS

AR6	Intergovernmental Panel on Climate Change Sixth Assessment Report
CPTED	Crime prevention through environmental design
DRR	Disaster risk reduction
GBV	Gender Based Violence
IPCC	Intergovernmental Panel on Climate Change
IDPs	Internally Displaced Persons
NbS	Nature-based solutions
NDCs	Nationally Determined Contributions
NCA	Northern Central America
NUA	United Nations New Urban Agenda
RCP	Representative Concentration Pathway
SSG/R	Security Sector Governance/Reform
SSPs	Shared Socioeconomic Pathways
TCOs	Transnational Criminal Organizations
WGI	IPCC Working Group 1



Neighbourhood in Tegucigalpa. Photo by Nick Kozak (2010), cropped, licensed under CC-BY-SA-4.0.

INTRODUCTION

Climate change, migration, security and urbanization are interlinked issues in Northern Central America (NCA), and could be addressed more effectively in integrated ways. Climate change-related hazards, including droughts and storms, have the capacity to drive people out of the countryside and into urban areas (de Sherbinin et al. 2021), where they often land in informal settlements that tend to be those most affected by organized crime, least served by urban planning and city services, and vulnerable to further climate hazards like flooding or landslides. This precarity can drive further migration and displacement, jeopardize human security, and affect the overall regional security situation and levels of climate resilience at both the national and municipal levels.

As climate impacts accelerate in the coming decades, NCA cities and countries will likely face more complex challenges arising from climate extremes, increased migration and displacement, involuntary immobility, and entrenched security issues related to domestic and transnational organized crime and corruption. Responding to these challenges may be made more difficult by background conditions including weak State capacities, political fragility and instability, the legacy of conflict, and structural inequalities related to socioeconomic status, gender, race and other social factors. As these challenges evolve, addressing them will require cross-sectoral approaches, from climate-resilient urban planning that accommodates new migrants, to addressing public safety and national security challenges in ways that are mindful of the broader risk landscape. Human mobility is at the same time an important means of managing and adapting to climate risk, and facilitating safe migration and meeting migrants' and displaced people's needs can help to maximize opportunities and positive outcomes for those exposed to climate risk.

There is an existing body of analysis on climate change, migration, security, and urbanization in NCA, produced by academic, government and intergovernmental organizations, and the NGO sector working in the region. However, most research and policy addresses only two or sometimes three of these issue areas, resulting in analytical gaps around the nexus of climate change, migration and security in the context of urbanization. There are also significant data gaps, for example on internal migration and displacement, environment as a driver of human mobility, and the relationship between security and climate vulnerability (IOM, 2021). For the most part, the communities of practice on these issues do not yet have the research or collaboration structures in place to address these knowledge gaps and formulate more coherent responses to these interlocking challenges.

This report is organized into three sections, covering 1) existing climate, migration, security and urbanization challenges, 2) compound risks that interact at the nexus of these issues, and 3) recommendations for addressing these in more integrated ways. It identifies knowledge gaps in the literature on climate change, migration and security, with a special focus on how these interact in urban contexts. It briefly notes existing policy efforts in these spaces, and closes with recommendations for the international, national and local levels. The aim is to orient future research and action towards improving outcomes on human security and climate resilience in NCA.



Panoramic view of Santa Tecla and San Salvador. Photo by Daniel Chavez Castro (2009), cropped, licensed under CCA 3.0.

1. EXISTING ENVIRONMENTAL, MIGRATION, SECURITY, AND URBANIZATION CHALLENGES IN NORTHERN CENTRAL AMERICA

NCA faces a number of challenges at the nexus of climate, migration and security in the context of urbanization, that compound vulnerability and threaten human security. The Central American region is among the most exposed to climatic phenomena in the world (IPCC, 2022/ECLAC, 2015), as well as one of the most unequal regions, with Gini coefficients of 38.8 in El Salvador, 48.2 in Honduras and 48.3 in Guatemala (World Bank, 2019b). National poverty rates are 62% in Guatemala and 60% in Honduras. These are higher among rural populations – 82% in Honduras, 77% in Guatemala and 49% in El Salvador, disproportionately affecting indigenous populations (ECLAC, 2018; ECLAC, 2019b; BCIE, 2020).

NCA experiences political inequalities, social exclusion, discrimination and marginalization based on race, ethnicity, gender (Obinna, 2021), and sexual orientation. The region is also affected by corruption, low confidence in State institutions (IDMC, 2019; ICG, 2020; Bruneau et al., 2011), weak governance, limited capacity to provide services (Villamarin et al., 2021; IDMC, 2018; Rigaud, 2018; Maria, 2017), a poorly functioning legal and justice system, and other challenges that affect state legitimacy and human security. Climate change, migration, urbanization and security challenges may compound these issues, making them more difficult to address. This section provides an overview of key challenges around this nexus in NCA.

1.1 Challenge: Climate vulnerability and environmental pressures in rural areas affect livelihoods and drive urban migration

Central America is highly climate-vulnerable, and a hotspot for acute food insecurity and reduced water security (IPCC, 2022). The World Risk Index 2021 ranks Guatemala 10th, El Salvador 18th, and Honduras 34th out of 181 countries in terms of disaster risk (Aleksandrova et al., 2021),

and the number of extreme weather events in Central America has increased 3% per year over the past 30 years (IPCC, 2022).

Barriers to participation and weak governance exacerbate citizens' vulnerability and risk to climate variability and change in Central America (Magrin et al., 2014), as they contribute to disaster risk reduction (DRR) and adaptation measures being inadequately and unevenly implemented. Poorer communities also face higher socioeconomic and physical barriers to climate adaptation (Kongsager, 2017), and climate extremes can exacerbate drivers of widespread and persistent poverty, in both rural and urban areas. High disaster risk, high rates of poverty and social vulnerabilities, and a lack of social protection mechanisms increase both adaptive and maladaptive migration and displacement.

1.1.1 High climate hazard exposure in NCA: Storms, droughts, heat, coastal vulnerabilities

The IPCC Sixth Assessment Report (AR6) names Central America among the regions with the highest exposure to climate change and also one of the regions of the Americas, along with the Andes and Northeast Brazil, most affected by climate migration and displacement. The region is regularly affected by ENSO (El Niño Southern Oscillation) events, drought, cyclones and intense rainfall events (IPCC 2022/ECLAC et al., 2015). Central America's long coastlines increase its climate exposure, with the Caribbean coast of Honduras particularly vulnerable to sea level rise, storm surge and coastal erosion. By mid-century, the main climate impacts in the region will include significant heat waves (IPCC 2022/Taylor et al., 2018); increased intensity and frequency of tropical cyclones (IPCC 2022/WGI AR6 Section 12.4.4.3, Ranasinghe et al., 2021), relative sea level rise, coastal flooding, erosion, ocean acidity, and aridity, drought and wildfires (IPCC 2022/WGI AR6 Table 12.6, Ranasinghe et al., 2021).

Limited central government capacity and state presence in rural areas opens ungoverned spaces for Transnational Criminal Organizations (TCOs) to operate. Insufficient state response to disasters has created opportunities for non-state armed groups to expand their control or increase their legitimacy or support, for example by providing disaster relief or meeting basic needs of the local population, as they have done by co-opting COVID relief in Guatemala and El Salvador (ICG, 2020).

NCA's Dry Corridor is projected to be significantly impacted. Across the isthmus, the Dry Corridor is home to 10.5 million people, and most of El Salvador's territory lies within it. Central American droughts have been increasing in frequency and severity since 2010; severe droughts in recent years have resulted in sharp declines in agricultural productivity and 3.5 million people needing humanitarian assistance (IPCC 2022/FAO, 2016). Looking toward the end of the century, under medium and pessimistic emissions scenarios (RCP4.5 and RCP8.5, representing the lower and higher

percentages), seasonal-scale droughts are projected to lengthen by 12–30%, intensify by 17–42% and increase in frequency by 21–42% (Depsky and Pons, 2021).

1.1.2 Climate change increases food insecurity: Slow declines in crop yields, incomes, and challenges to traditional livelihoods

Climate change impacts both self-provisioning staple crops and export/cash crops. Both affect food security, which is a function of cultivating subsistence crops, acquiring wild-sourced foods, and buying food with income that, in rural areas, is often tied to agricultural wage labor (Pons, 2021). These food and income sources will continue to be affected by climate change; increasing seasonal droughts will impact the agricultural and fisheries sectors as well as subsistence farming (IPCC, 2022/ECLAC et al., 2015; CEPAL et al., 2018; Harvey et al., 2018; BCIE, 2020; CEPAL and CAC-SICA, 2020).

Concentration of land ownership and agro-export economic models – particularly in

Benefits of mobility

Mobility is a well-established adaptation strategy to improve human security and reduce socioeconomic vulnerability, for example to cope with food insecurity or support recovery after a disaster. Adaptive outcomes are best when levels of agency and assets are high, and migration is safe and orderly (IPCC, 2022), for both migrants and sending communities (Sakdaprolak et al., 2016; Gemene and Bolcher, 2017). Mobility in response to climate impacts can be an effective livelihood strategy, especially when it results in sending remittances and strengthening trans-local networks (McLeman et al., 2021). However, given the uncertainties involved, it may also reduce adaptive capacity for some migrants and communities, depending on the outcomes (Jacobson et al., 2019, Vinke et al., 2020). Mobility can also reduce exposure to climate hazards when affected communities are relocated to safer ground – yet these policies are often challenging and require in-depth consultation with communities (IPCC, 2022).

Remittances (including domestic remittances sent from urban migrants) can support resilience and adaptive capacity by providing resources for infrastructure, agricultural supplies, food, education or health in source communities (ECLAC, 2018). In 2020, personal remittances accounted for 14.7 percent of GDP in Guatemala, 23.6 percent in Honduras and 24.1 percent in El Salvador (World Bank, 2021). Remittances can be a primary source of income for families in source communities, and of foreign exchange for NCA countries (IPCC, 2022). However, remittances can also deepen economic inequalities, with better-off households receiving more remittances both before and after disasters; this can affect, for example, the quality of recipients' housing and resilience to extreme weather shocks (Hoffman, 2020).

Policies that proactively harness the benefits migrants can bring can lead to better economic, social, health, and other human security outcomes, for sending and receiving communities.

Guatemala, where two-thirds of land is owned by 2.5% of farms (Carte et al., 2019) – negatively impact smallholders’ adaptive capacity and human security (Andrasko, 2022). In a future where climate is more uncertain, less predictability in smallholder and export-crop agriculture lowers the opportunity cost of moving to cities to diversify or supplement incomes in order to improve food security.

1.2 Challenge: NCA urban areas could grow significantly due to migration and demographic trends

Central America is one of the most urbanized regions in the world, with the second-fastest rate of urbanization (Maria et al., 2017). At present, 59 percent of Central America’s population lives in urban areas; within a generation, this is projected to grow to 70 percent, and by mid-century the urban population is projected to double (*Ibid.*). In NCA’s capital cities and their suburbs, the rate of urban development has nearly tripled over the past four decades; Guatemala City and Tegucigalpa’s population densities are now as high as 11,000 people per km² (IPCC, 2022/Programa Estado de la Nación - Estado de la Región, 2016).

NCA’s future urban population depends on a range of factors including development pathways, demographic trends, and migration policies. These factors will also affect climate-related migration and urbanization as they interact with climate change. Scenarios that explore these dynamics have been modeled using the Groundswell Report methodology,¹ and three development scenarios based on widely-used Shared Socioeconomic Pathways (SSPs).²

1 By de Sherbinin and colleagues at the Center for International Earth Science Information Network (CIESIN) at Columbia University (de Sherbinin et al. 2021), building on the methodologies used for the World Bank’s seminal report Groundswell: Preparing for Internal Climate Migration (Kumari Rigaud et al. 2018).

2 These are:

- A sustainability development scenario with declining fertility and mortality in developing countries (SSP1);
- A fossil-fueled development scenario with reasonably bright development prospects across low, medium and high-income countries (SSP5);
- A scenario representing a divided world with high barriers to international migration and poor

Looking at the number of additional migrants moving to NCA urban areas under conditions of climate change, modeling found:

- By 2050, Guatemala will see anywhere from a low of 37,000 to a high of 187,000 climate migrants moving to urban centers ranging in size from Guatemala City to middle sized cities. At the high end of the pessimistic scenario (Representative Concentration Pathway (RCP) 8.5 and SSP3),³ as many as 1.3 million people could move to Guatemala City by 2050, and 60,000 to Quetzaltenango, Guatemala’s second-largest city.
- By 2050, Honduras will see anywhere from a low of 3,700 to a high of 742,500 climate migrants moving to urban centers ranging in size from Tegucigalpa to middle sized cities. At the high end of the pessimistic scenario, the number of climate migrants will be 380,000 in Tegucigalpa and 300,000 in San Pedro Sula, Honduras’ second largest city.
- By 2050, El Salvador will see anywhere from a low of 550 to a high of 173,000 climate migrants moving to urban centers ranging in

development prospects in low-income countries (SSP3) (de Sherbinin et al. 2021).

3 de Sherbinin et al. 2021 use five scenarios in their modeling for this study, representing combinations of Shared Socioeconomic Pathways (SSPs) and greenhouse gas emissions pathways (Representative Concentration Pathways, or RCPs). These five scenarios are:

1. An optimistic scenario (RCP2.6 and SSP1), in which climate impacts are rapidly reduced on a global scale and there is regional convergence toward higher levels of development across Central America and Mexico.
2. A pessimistic scenario (RCP8.5 and SSP3), in which climate change impacts are on the high end of current plausible scenarios and significant challenges to socioeconomic development exist throughout the region, exacerbating the gap between Central America and the United States.
3. A more climate-friendly scenario (RCP4.5 and SSP3), which pairs a less-extreme climate outcome with the same challenging socioeconomic future as the pessimistic scenario.
4. A more development-friendly scenario (RCP8.5 and SSP5), which follows the pessimistic climate future but assumes a more inclusive development pathway in which fossil-fueled regional economic growth occurs quickly.
5. A moderate scenario (RCP4.5 and SSP5), in which fossil-fueled socioeconomic development progresses throughout the region accompanied by a more moderate level of climate change.

size from San Salvador to middle sized cities (de Sherbinin et al., 2021).

Within these large brackets, there are important variations to note among the three NCA countries. Unlike its neighbors, El Salvador's total population is projected to decline by 2050 under the higher-development scenarios (1, 4 and 5 in footnote below), partly due to a reduction in fertility rates, but increase under the most pessimistic scenario (RCP8.5 and SSP3), mainly due to US restrictions on immigration which would disincentivize migration (*Ibid.*).⁴ In the high-development scenarios, such a population decline would affect not only rural areas, but also urban centers like San Salvador, Lourdes and others. Under more pessimistic scenarios, populations in urban and suburban areas are projected to grow by 1.3 to 1.5 million people (*Ibid.*).

The growth of urban areas in NCA, including informal settlements, can increase exposure to climate hazards, including flooding and landslides, due to changes in land use, deforestation, and an increase in the population that is located in highly vulnerable areas (Villamarín et al., 2019; CONAVI, 2017). Much of NCA's urban infrastructure is in poor condition, and will be strained by climate impacts such as extreme precipitation and heat events. How NCA cities prepare for growth in a changing climate will impact their economic and security trajectories.

Guatemala's cities see a significant growth in urban population by 2050 under the pessimistic climate and development scenarios, of between 9.7 and 10.9 million (compared to a current population of 18 million), including in smaller cities as well as suburban areas. Population density in Guatemala City is projected to continue to increase, due in part to climate-related in-migration from small towns and rural areas (*Ibid.*).

Under most scenarios, Honduras is projected to experience population growth in its small and

⁴ The figures are: declining from 6.1 million in 2030 to 5.4 million in 2050 under SSP1, and from 5.6 million in 2030 to 4.2 million in 2050 under SSP5, while increasing by 2.3 million under SSP3 (de Sherbinin et al 2021).

large cities as well as rural areas, but much higher urban center growth of 3.7 to 4.4 million people under the pessimistic scenario (*Ibid.*). Projected growth of rural populations in Honduras may indicate more 'trapped' populations, who are exposed to the climate hazards projected for the country, but with limited mobility.

1.3 Challenge: High levels of violence and insecurity in NCA – organized crime, corruption, structural inequalities and the legacies of conflict

Violence at the hands of state and non-state actors has produced a human security crisis in the NCA region. Climate change compounds the vulnerability of the most marginalized, and further strains institutions hampered by long legacies of conflict and corruption.

Criminality and violence in NCA are pervasive, entrenched, and multidimensional. Researchers have characterized NCA countries as "impunity states" where criminal and state violence go unpunished (Bowen, 2019), and where close links and networks have arisen between organized crime, political authorities, and law enforcement (Dammert, 2019). Criminal organizations operate in both rural and urban areas, trafficking drugs, humans and weapons, laundering money, facilitating elite resource capture, and cultivating drugs crops. Some corruption among the security services and shortcomings in the effectiveness of NCA justice systems contribute to TCO influence over government institutions and actors. High levels of criminal activity are partly a function of weak institutions and deep inequalities, and they in turn undermine institutions, exacerbate inequalities, and compound state fragilities.

1.3.1 Urban violence and insecurity – maras and pandillas, law enforcement crossfire

While the NCA region's two civil wars ended in the 1990s, violence has continued unabated, mainly connected to criminal organizations with complicated relationships to the state. Local groups referred to as *pandillas* focus primarily

on local territorial control, while *maras* are groups that profit from the transnational political economy of trafficking humans, drugs and weapons. Both types of groups oversee local economies of extortion and forced recruitment, stunting growth opportunities for local populations, including migrants, and intensifying insecurity (US Dept of State 2021, UNODC 2012, Bruneau, Dammert and Skinner 2011). *Maras* and *pandillas* are centered in urban areas but have also expanded to control territories, commerce and populations in the countryside (Iraheta and Escalante, 2018; Alfaro and Recinos, 2021).

People in communities affected by gangs experience a range of forms of violence including assault, extortion, robbery, and intimidation. Young people may be pressured to join or otherwise assist gangs, young women can be sexually harassed and intimidated, while LGBT+ individuals may be targeted with death threats (Escamilla García 2021, IDMC 2018a, IDMC 2018c, ICG 2017a, Bruneau, Dammert and Skinner 2011). Homicide rates in NCA are among the highest in the world, are often linked to drug trafficking, while prosecutions for homicide and other serious crimes are low. Levels of petty crime and criminal violence such as armed robbery and carjackings are also high in NCA cities.

Law enforcement and military efforts to push back against gangs can unintentionally harm civilians and impact human security, for example through zero-tolerance policies that target the appearance of gang membership or activity, or through excessive use of force or extrajudicial killings, including during states of emergency. Hard-line *mano dura* policies aiming to tackle serious gang violence have at times had the perverse effect of decreasing human security and strengthening gangs, as the suspension of constitutional rights, arrests based on profiling, and corruption in the criminal justice system have impacted the poor indiscriminately (Jütersonke, Muggah, and Rodgers, 2009; Bergmann, 2019; Bruneau and Skinner, 2011; ICG, 2017a). For example, according to the Interamerican Commission on Human Rights, El Salvador's March 2022 declaration of a State of

Emergency in response to a surge in homicides⁵ led to 65,795 detentions up to April 2023 of which 90% were detained as a preventive measure (ICHR, 2023). In different contexts, non-State groups can benefit from a lack of trust in government authorities.

1.3.2 Rural violence and insecurity – Transnational Criminal Organizations (TCOs), private sector and state-driven resource exploitation and displacement

TCO operations in rural areas also increase human insecurity in the context of climate change. TCOs are responsible for deforestation to build narcotrafficking infrastructure like roads and landing strips, and to establish cattle ranches and other enterprises to launder money (McSweeney et al., 2014). Cocaine trafficking may drive up to 30 percent of annual forest loss nationally in Central America, and between 30 and 60 percent of deforestation in protected areas (Sesnie et al., 2017). Such deforestation increases local climate vulnerability by worsening disasters like floods, and constraining local populations' movement for evacuation during disasters (Rodriguez, 2018). Deforestation and other TCO-related environmental degradation erode livelihoods and governance among rural poor and indigenous communities (Devine et al., 2021), and is responsible for dispossessing and displacing residents of protected areas, and forcing rural and indigenous landholders to sell (McSweeney et al., 2018; Oxfam, 2016).

Some TCO activity in NCA is linked to politicians and business interests, especially in Honduras and Guatemala, where links between gangs, organized crime and political actors have been identified (IDMC, 2018a, IDMC, 2018b, IDMC, 2018c, Mendez, 2020, ICG, 2019). Violence mobilized by private interests also has the effect of driving displacement from rural areas. Gangs hired as hitmen for regional elites and local politicians have also driven rural displacement and the political repression of communities most vulnerable to climate change.

⁵ El Salvador saw eighty-seven homicides over one weekend, March 25-27, 2022, including 62 on Saturday the 26th. According to a police report from the *Centro de Información y Control Operativo Policial*, only 13 of the 62 killed on the 26th were known gang members (Rauda et al., 2022).

Extractive industries (mining, timber), agribusiness (palm oil, sugarcane, rubber), and dam-building have come into conflict with local communities over land acquisition, in some cases resulting in the targeted killing of community leaders and the dispossession of smallholders, who may then supplement incomes through labor migration (Carte et al., 2019). Where pursuing commercial activities has become a motivation for population displacement, both organized crime actors and government agents have targeted activists and community leaders first, in order to convince a rural community to leave an area “voluntarily,” before escalating violence (IDMC, 2018a). As a result, assassinations of environmental defenders in NCA have risen steeply, with Honduras having the most killings per capita from 2006-2016 (Glazebrook and Opoku, 2018).

One example of this type of activity is the *Franja Transversal del Norte en Guatemala*, a highway connecting Guatemala to Mexico via land appropriated by the military during the violence of the 1980s, which led to waves of displacements by enabling petroleum, mining, hydroelectric and agribusiness projects. In 2014, for example, nearly 21,000 rural small-holders were evicted by the Guatemalan government, largely at the behest of extractive projects (IDMC, 2018). In addition to driving out-migration, this reduces confidence in government services for internally displaced peoples seeking support once they arrive in cities (IDMC, 2020; ICG, 2020; Bruneau, 2011).

1.3.3 Corruption and extortion economies: impact and driver of further insecurity

All three NCA countries rate poorly on Transparency International’s 2021 Corruption Perception Index (Transparency International 2022), with Guatemala and Honduras’ ratings falling recently, partly in response to high-profile cases involving top political leadership.⁶ Corruption and impunity erode institutions and the social compact that are important for

⁶ Recent examples include the dissolving of the *Comisión Internacional Contra la Impunidad de El Salvador* – CICIPES, and the Special Prosecutor’s Office against Impunity (FECI) in Guatemala; or the 2022 trial of Honduran ex-President Juan Orlando Hernández in the US on drug-trafficking charges.

human development and resilience, and drive insecurity dynamics across the spectrum, from the economic burden of bribes, to dismantling justice systems and weakening their ability to enforce the rule of law, including against criminal organizations. Attempts at outsourcing anti-corruption governance to external actors (Krylova, 2018), such as the UN, have met limited success. Discrimination based on class, gender, race, or other factors can amplify the impact of corruption, in terms of increasing exposure and impact, and limiting the ability to pursue justice (McDonald et al. 2021).

Extortion is a major revenue source for gangs, and can directly and indirectly drive migration and displacement (InSight Crime & Global Initiative Against Transnational Organized Crime, 2019). Small business owners in areas controlled by gangs may choose to cease trading, or not establish businesses, rather than bear the economic burden of paying protection money. This business environment can impact livelihoods and be a push factor for further migration (IDMC, 2020). Continued extortion and the threats used to perpetuate it can result in a cycle of displacement, as migrants must flee multiple times to new neighborhoods and new cities (ICG, 2017a, ICG, 2017b, IDMC, 2018).

Extortion is also a significant drag on economic development, with costs amounting to an estimated 1.7 percent of El Salvador’s GDP, 1 percent of Honduras’s, and totaling around US\$60 million in Guatemala annually (InSight Crime & Global Initiative Against Transnational Organized Crime, 2019). These revenues provide a substantial resource base for criminal groups to sustain themselves and expand their illicit enterprises, as well as to further corrupt state institutions and actors, including those aimed at countering organized crime.

1.4 Challenge: Gender Based Violence (GBV) and femicide – mobility push factors, benefits and hazards of urban environments

Gender inequality in NCA shapes climate vulnerability and the risk picture around migration in both rural and urban contexts. Women and girls may be less mobile, face

additional risks in shelters for the displaced, and be more vulnerable to exploitation or trafficking when they migrate. Migrants in NCA face multiple discriminations based on their gender, race, and socioeconomic and migration status (Felipe Perez, 2019). Women also face GBV in situations of displacement and emergency accommodation; for example, GBV and sexual violence were reported in Honduran shelters following hurricanes Eta and Iota in 2020 (Shackelford, 2020).

GBV is normalized in NCA and there is a high degree of impunity. Femicide rates in Honduras and El Salvador are among the highest in the world, although declines have been recorded since 2015 (UNODC, 2019; UNODC, 2021). Incidence is slightly lower in Guatemala, but still high per capita. GBV and femicide perpetrated by gangs has different dynamics to that by intimate partners; however, statistics differentiating between these are limited, in part because of sometimes overlapping relationships.

Migrating to an urban area can increase or decrease the risks of GBV and femicide. Cities may have more readily available resources to support survivors of GBV, including economic opportunities, so women may be less vulnerable than they were in rural areas. However, new migrants in urban areas often have less robust social networks and structures that can support GBV victims, and poverty and marginal living conditions can increase risks (McIlwaine, 2013).

GBV can also act as a push factor for external migration (Obinna, 2021), though many victims are economically dependent on their abusers and do not have the resources to migrate. Indigenous women may be particularly affected and have less recourse to criminal justice systems. In addition, the push factors for migration and displacement from urban areas are gendered, with young women frequently reporting the threat of sexual violence as a trigger, among other gang-related violence, while young men report migrating to avoid forced recruitment. Gangs use extreme sexual violence and femicide as a form of punishment, vengeance and signaling to other gangs (Knox, 2019).

Further research is needed to examine the potential connections between livelihood insecurity and GBV, stress on households induced by climate-related migration and domestic/GBV, as well as vulnerability to human trafficking.



Chichicastenango, Guatemala. Photo by Jacken Holland on Unsplash.

2. COMPOUND RISKS: CLIMATE CHANGE, MIGRATION, SECURITY AND URBANIZATION CHALLENGES

This section explores how the challenges outlined above can interact, particularly in urban contexts. It highlights the limits of the existing research on this nexus issue, which will be important to address in an integrated way as these drivers accelerate in coming years.

2.1 Compound risks: Migrants settle in hazardous informal areas, increasing urban climate risk exposure

Migrants from rural areas often settle in peri-urban and marginal areas of NCA cities, for example in ravines, on hillsides, along rivers or near landfills. Urban growth in Latin America increased slums and other marginal settlements from 6 to 26 percent of total residences between 1990 and 2015 (IPCC, 2022). Slums house 29% of all urban residents in NCA; in Guatemala the figure is 39% (Maria et al., 2017).

These settlements are often informal and illegal, with irregular land tenure, and tend to lack basic services like water or sewer systems, which an estimated 30-66% of urban dwellers in Central America do not have. Without documented incomes or banking histories, the urban poor live in self-built, self-financed housing in places at risk of flooding and landslides: 3-10% of houses are in high-risk, disaster-prone areas. The housing construction and locations may be precarious and do not meet safe building standards. The materials most commonly used increase the risk of damage due to disaster, leading to higher disaster recovery costs (Maria et al., 2017, Bartels et al., 2020).

The populations of informal settlements are politically and institutionally marginalized for multiple reasons, including the lack of formal land tenure within cities, residents' socioeconomic characteristics, and other factors (UN-HABITAT 2019). Women and indigenous people tend to have the weakest land tenure rights (Antonio et al., 2014).

In November 2021, hurricanes Eta and Iota damaged housing and drove displacement from informal settlements around San Pedro Sula, Honduras, including those in Choloma. Extreme precipitation led to flooding and mudflows that damaged buildings in these settlements, particularly those built along waterways. Choloma is one of the highest-crime neighborhoods of the city; San Pedro Sula is an MS-13 stronghold and rival gang violence has given it one of the highest homicide rates of any urban area (InSight Crime, 2022). Since Eta and Iota, residents displaced between areas controlled by different gangs have faced barriers to returning home, or migrated internationally due to new threats from gang members. According to UNHCR's Honduras representative "Gangs took advantage of the extreme vulnerability of victims of the hurricanes to tighten their control, imposing restrictions on movements. For many who were displaced by the storms, going back could be dangerous" (UNHCR, 2021b).

The policy response to these challenges is limited at present, with minimal integration of risk governance and disaster resilience concepts into regional discourses on urban development (Sandoval and Sarmiento, 2019). Further research is needed to identify the magnitude, scope and specific needs of people migrating to the areas most exposed to compound vulnerabilities in NCA, as well as to better-isolate climate-related drivers in these movements. Understanding the profile of those who move to cities in the context of climate change, and their mobility patterns including onward migration, could support this.

2.2 Compound risks: Informal settlements, criminal groups, human insecurities

Informal settlements receive the most vulnerable new migrants and IDPs, are more exposed than other urban areas to climate hazards like floods and landslips/landslides, and are also the most affected by a lack of security, criminal violence, and gang activity. Because these areas face a range of interlocking challenges that are resource-intensive to address comprehensively, from a strategic standpoint they may also be a lower priority for resilience investment from government (Davis, 2012).

With regard to gang recruitment in poorer neighborhoods, while robust research has been conducted on grievances, environmental issues and rebel-recruitment (Collier, 2000; Humphreys, 2005), the literature on interactions between these drivers and gang recruitment or involvement is sparse. There are significant knowledge gaps on how internal displacement, ethnicity, and food security impact the relationship between gangs. Data identifying which demographic groups are particularly vulnerable to extortion and recruitment is also lacking. Such data could help to identify the ways in which climate migrants interact with urban insecurity, and the ways in which the climate crisis interacts with the incidence of extortion and violence from state, para-state and non-state actors.

Gangs' control of urban areas and informal settlements can make climate resilience and disaster risk reduction and response more difficult. Gang control can limit movement within and between neighborhoods, preventing neighboring areas from addressing common risks, limiting access to the area for personnel from organizations or institutions, reducing community leadership and civic participation, and increasing fear of dealing with critical neighborhood issues, among other impacts (ICG, 2017a; Bartels et al., 2020; INCIDE, 2016). Given the importance of community-level engagement with urban resilience to both disasters and chronic violence (Davis 2012;

Sandoval and Sarmiento, 2019), this dynamic could be self-reinforcing in NCA cities.⁷

2.3 Compound risks: Urban migrants' human security and further displacement – limited livelihoods, gang violence as push factors for external migration

New migrants in urban areas are often more vulnerable and may face more livelihood challenges. They often lack the community bonds and social networks that support wellbeing and enable finding work in the informal sector, which many rely on due to lack of more marketable skills. Such informal work settings can increase vulnerability to abuse or exploitation, with different impacts on men and boys, and girls and women. Low wages in the informal sector limit livelihoods and the ability to send remittances or support dependents. Persistent poverty and limited social mobility can influence the decision to migrate internationally, given that opportunities for earning and sending remittances may be higher outside of NCA cities. Data indicate that youth from poorer municipalities of Guatemala choose to migrate internationally rather than internally, due to difficulties securing higher-paying work in cities (Eberhard-Ruiz 2021). Fear of violence in urban areas can also act as a deterrent for internal migration (Dodd et al. 2019).

Poverty and gang violence are primary drivers of youth migration from NCA (Escamilla García 2021). There is an established pattern of migrating internally for economic reasons, followed by migrating internationally due to violence in urban areas (Escamilla García 2021, Muñoz-Pogossian and Chaves-González 2021).

⁷ It is also the case that local groups engaged in violence may provide a level of services, protection and security that can be relevant to informal coping mechanisms, e.g., after disasters. Given this, humanitarian groups may need to engage with these informal actors when responding to crises in urban settings, guided by community players who understand the nuances of local power dynamics (Twigg and Mosel, 2018; Bangerter, 2010). Humanitarian actors regularly engage with non-state armed groups in rural settings, but have been more reluctant to do so in urban contexts affected by criminal violence (Twigg and Mosel, 2018).

In cities, the male children of migrant families can be forcibly recruited into gangs to ensure familial alliance with the gang in their territory. They may be forced to engage in narcotrafficking, extortion and killing. An estimated 65% of schools are affected by gangs, with forced gang recruitment of children in schools having caused children to leave the education system, and sometimes their neighborhoods, cities, or the country (Hernández Bonilla 2021, ICG 2017a, ICG 2017b, Department of State 2021).

In terms of how these dynamics interact with climate and environment, there have been few studies of the relationship between 1) climate impacts, such as disasters, 2) internal displacement or migration, and 3) violence. Even fewer study slow-onset events linked with these outcomes. Higher homicide rates in Honduras (most of which happen in cities) strengthen the association between rainfall deviation (as a measure of climate impacts) and apprehensions of Hondurans at the US border (Bermeo and Leblang 2021). There is a strong statistical correlation between internal displacement caused by disasters (both climate-related and geological, for example earthquakes or volcanic eruptions) and homicide, which in turn is strongly correlated with external migration (Muñoz-Pogossian and Chaves-González, 2021). More research is needed on slow- and sudden-onset climate impacts, urban vulnerabilities and human mobility. Key needs in this space include improved methodologies for data collection, better indicators on the environment and human mobility, and more integrated analysis and coordination (*Ibid.*).

2.4 Compound risks: Gender-specific impacts – traditional roles, barriers to mobility

Gender inequality in NCA contributes to risk and insecurity being unevenly distributed, as discussed in section 1.4 above. The risks and benefits of migration are experienced differently by men and boys, and women and girls. Women in NCA face more barriers to migrating, including culturally-reinforced responsibilities for dependents and unpaid care work. Female urban migrants' earning capacities tend to be limited by lack of education and training; indigenous

people can also face language barriers. Women are more vulnerable to exploitation, including sexual exploitation. Such disadvantages may also limit women's access to the justice system.

Men tend to be more mobile, internally and internationally. There are risks and benefits associated with this mobility, in terms of vulnerability to violence and exploitation, and livelihoods and earning potential. Young men are more likely to be the targets of violence and gang recruitment (IDMC, 2018b). Men who migrate can start new families in destination areas, and if this means dependents are not supported in source areas, they may become a "trapped population" with limited mobility and resilience, who either cannot migrate, or do so under the most unfavorable conditions (Felipe Perez, 2019; IDMC, 2018a). Those unable to leave high-risk areas due to socioeconomic barriers, family responsibilities or other reasons, may face deteriorating conditions and severe human security risks, lacking both the resources to relocate and to adapt to climate risks in place (de Sherbinin, 2021; IOM, 2022).

2.5 Compound risks: Human trafficking in the context of climate-related mobility

The nexus between climate change and human trafficking remains relatively underexplored (IOM 2016), including in NCA. However, people moving in the context of climate change fit the profile of those who fall victim to trafficking, defined as the recruitment, receipt, harboring, transport or transfer of people to be exploited for profit (UNODC 2022). A lack of opportunities for women and children makes them vulnerable to victimization and manipulation by traffickers (Hernández Bonilla 2021). Arriving in unfamiliar urban spaces without a social network and in poverty can put migrants at risk of exploitation and trafficking.

Women and children constitute the vast majority of trafficking cases identified by law enforcement, but nonprofit organizations find much larger and more diverse numbers. Labor trafficking is less likely to be investigated than sex trafficking and therefore less likely to be detected. All three countries have had cases

of forced labor and sexual abuse of domestic servants, as well as trafficking in construction, textiles and other industries linked to global supply chains. (US Department of State 2021, Hernández Bonilla 2021).

To the extent that climate impacts influence the number or vulnerability of people in urban settings that are at risk of exploitation or trafficking, this might indirectly strengthen the actors or organizations engaging in this criminal activity.

2.6 Compound risks: Structural inequalities, grievances, NCA political environment and the legacy of conflict

Grievances around structural inequalities related to race, ethnicity, and socioeconomic status have shaped the political environment in NCA, including during the civil wars in Guatemala and El Salvador. This has a number of resonances for the climate, migration, and security nexus in the context of urbanization. Having been targeted by their country's militaries throughout the 1980s, indigenous peoples and the rural poor migrating in response to climate impacts in rural areas may be less likely to seek services or other help from local governments. Additionally, this can prevent victims of gangs from seeking support from police or security forces (IDMC 2018a, IDMC 2018c, ICG 2017a, ICG 2017b, ICG 2019).

Given the history of deep divisions and legacies of the conflicts, it is conceivable (although speculative) that political actors might eventually capture or leverage narratives of grievance, inequalities, or injustice related to exclusion and marginalization in the context of climate impacts. People living in poverty are the most exposed and most vulnerable to climate, urbanization and security dynamics which can reinforce social and economic inequalities. A recent study assessed support for political violence based on discrimination, political exclusion and economic dissatisfaction, and found a high level of support in Guatemala (Dyrstad and Hillesund, 2020).

Any links or associations between climate impacts and political violence in NCA would be very indirect, and mediated through social and political drivers that are more consequential for security outcomes. But climate-related stressors may affect drivers that have been relevant to the region's security challenges in the past.

3. RECOMMENDATIONS: ADDRESSING INTERLINKED CLIMATE CHANGE, MIGRATION, URBANIZATION AND SECURITY CHALLENGES

Efforts to address climate vulnerability, migration, urbanization and security challenges should be informed by understanding their interrelated nature. Across local, national, and regional governance, urban planning and security interventions that are mindful of future climate and dynamics may be more successful over the medium-term. Taking a nexus approach calls for more integrated systems thinking, maximizing co-benefits between programming for equitable and sustainable urban development, climate resilience, disaster risk reduction, and social inclusion. This section outlines recommendations to inform this approach.

Policy frameworks that are relevant for these efforts include the UN New Urban Agenda (NUA); the SDGs, particularly 10, 11, 13 and 16; the International Guidelines on Urban and Territorial Planning; the Sendai Framework for Disaster Risk Reduction; the Global Compact for Safe, Orderly and Regular Migration, and the stream on mobility within the UNFCCC.

3.1 Recommendation: Develop a platform to build coherence between climate, migration and security actors and policy frameworks in NCA

Addressing climate, migration and security as a nexus issue requires building coherence among existing interventions and their related policy frameworks. This could be achieved by a central organizer developing a platform to facilitate planning, aimed at avoiding contradiction between the climate, migration and security agendas being implemented in the region, for mutually reinforcing benefits.

An important part of this process would be building relationships and communication channels across the security, urban resilience,

DRR, climate adaptation, and migration communities of practice in NCA countries and in the region. This process or platform could also engage the research and practitioner communities to explore how climate, migration, and security could intersect in specific urban areas, map existing responses, and define future programming and policy needs.

Such a research and policy process could provide good practices for, and take lessons from, other countries and regions affected by the climate, migration, security and urbanization nexus. The current level of international political will for addressing climate change, migration and security, offers an opportunity for this.

Ongoing work such as the Plan A platform by UNEP is establishing around the National Adaptation Plans, where teams from Central America (including El Salvador and Honduras at the time of writing) working on NAPs are sharing issues around climate risk modelling, governance, political and monitoring frameworks among others. The Plan A platform is one way to build technical capacities for adaptation to climate change at national and local levels.

3.2 Recommendation: Prepare future migrants and future cities

Protecting rural livelihoods and addressing the drivers of displacement to NCA cities is an important element of climate resilience. For city-dwellers facing increased outmigration pressures related to climate vulnerabilities, urban adaptation strategies will be essential. The details of existing urban climate resilience programs vary widely, as do the nature and social context of vulnerabilities. A common thread is investing in participatory mitigation and adaptation plans that engage people with higher vulnerability, including women, youth, indigenous, Afro-descendent and other minority ethnic populations, in identifying needs and proposing solutions.

There are a diverse range of participatory non-governmental adaptation initiatives at national, regional and municipal levels. One example is the CityAdapt project in the Arenal Monserrat area of San Salvador, which focuses on reducing the risk of floods and landslides by restoring vegetation and improving water absorption and channeling (CityAdapt 2020). The project also incorporates climate justice principles of participation and inclusivity, capacity-building, justice and equity, gender considerations, livelihood improvement, appropriateness of scale, and integration of indigenous and local knowledge (CityAdapt 2021).

Another example is the Climate-Resilient Cities Initiative focused on small and medium-sized cities across Latin America, and including Santa Ana, El Salvador (Villamarín 2019). In informal settlements in urban areas in El Salvador, participatory risk-assessment and watershed restoration has helped stabilize settlements in areas at high risk of flooding (CityAdapt 2021, Villamarín 2019).

IOM's collaborations with UNCHR to improve energy access for displaced persons could be relevant for meeting energy needs in informal settlements in NCA – as well as for ensuring emissions are included in Nationally Determined Contributions (NDCs).

UNEP has supported the development of proposals for NAPs in five Central American countries including Honduras and El Salvador, including in the Dry Corridor, using NbS with a focus on preserving livelihoods. These projects are building a community of practice in this area, with migration as an ever-present aspect of human security.

The Nature4Cities project creates “a comprehensive reference Platform for Nature Based Solutions (NBS), offering technical solutions, methods and tools to empower urban planning decision making” (<https://www.nature4cities.eu/the-n4c-project>). This includes political analysis for territorial planning, with a climate adaptation component.

These approaches offer good practices for targeting high-risk, informal settlements including watershed restoration and home improvement initiatives. To replicate them, scaled-up data on the aggregate needs and existing impacts of programs throughout the region should be developed.

National and municipal governments should strengthen legal frameworks and policies that promote urban migrants' economic, social, and political integration; reduce exposure to environmental hazards through climate-robust and risk-sensitive land use, urban planning, building code implementation, natural resource management and adaptation; and engage with regional processes and entities discussing migration policy, such as the Regional Conference on Migration, IOM, the Platform on Disaster Displacement and ECLAC/CEPAL (de Sherbinin et al., 2021). This is part of a broader need to adapt migration policy to facilitate safe and orderly mobility as an adaptation to climate change, both within countries and outside of the region, in order to capitalize on the positive benefits of mobility for migrants, receiving communities and communities of origin. These include improved economic well-being, more dynamic labor markets, and remittances, which can increase climate resilience in destinations and communities of origin.

To address the challenges of informal settlements, municipalities should improve risk mapping and land use planning, as well as data collection and urban development management tools (Di Villarosa, 2021). Investments focused on both migrant inclusion and mitigating climate hazards in at-risk areas can maximize the positive benefits of in-migration (de Sherbinin et al., 2021). A gendered perspective to participatory planning, which empowers women to define vulnerabilities and resilience measures to address them is key (Villamarín et al., 2019). Promoting women's involvement in society in such ways can positively affect the security environment (Dixon and Krueger, 2020) and climate resilience (Aguilar Revelo 2021). However, as discussed in section 2.2, the security context may complicate implementation of these objectives in the most vulnerable neighborhoods of NCA's cities.

Networking existing initiatives and programming to address key issues around this nexus can support NCA cities' resilience and maximize the benefits and opportunities of migration. Existing platforms, such as the Regional Conference on Migration, or the work surrounding the Global Compact for Safe, Orderly and Regular Migration and the International Migration Review Forum, should be leveraged to better integrate discussions on the role of cities in the migration, security and climate nexus.

3.3 Recommendation: Improve data collection and use

Preparing for urban migration in a climate-changed future requires good data and modeling at the national and municipal level. However, data on different aspects of vulnerability is fragmented between agencies which do not communicate effectively, and the urgency of short-term needs makes long-term planning less likely to happen without dedicated funding (Villamarín et al. 2019). In addition, NCA's cities may not at present have adequate technical expertise for climate resilient urban planning, although there are initiatives to build capacity in this area. These include ECLAC/CEPAL climate projections and infrastructure planning, CityAdapt's pilot projects including in El Salvador, IDB's Emerging and Sustainable Cities program, and others.

There are similar challenges to collecting and using migration data. At the national level, distrust of the state and a lack of political will (in Guatemala the only national data available is from 1997 as the state does not recognize internal displacement) make identifying vulnerabilities and responding to them challenging. Program data that is collected by NGOs, civil society, and other actors is also difficult to aggregate due to its fragmentation, a lack of incentives for data sharing, and the unsystematic and inconsistent way that different organizations collect their data (IDMC 2019). Data on internal migration remains scarce and limited in terms of the timeframes they cover, as census and household surveys do not always include comparable data, do not often collect information about drivers of human mobility, and are not regularly undertaken.

Cities, in contrast, are well-positioned to both analyze vulnerability and identify solutions to promote social protection (Villamarín et al. 2019, Maria et al. 2017). Data relevant to profiling vulnerability have been collected by municipal agencies and social organizations, however planners may not know that it is there or have sufficient expertise to understand and utilize it (Villamarín et al. 2019).

Improving municipalities' data collection and analysis on climate-related mobility and security is an important priority. This should include building systems for information-sharing, as well as developing the technical expertise to analyze and act upon the data.

3.4 Recommendation: Enhance social protection and access to services, with special provisions for migrants

One approach to confronting the rising human security issues discussed above is through social protection programs. Social protection has a variety of definitions operationalized by various development actors, but they all share the aim of reducing vulnerability, mitigating risk, and enhancing resilience to shocks (Scott, 2012; Holmes, 2010; Norton et al., 2001; Singh, 2007; World Bank, 2003).

Cities could be well-positioned to design and implement locally-appropriate social protection programs (Maria et al., 2017; Villamarín et al., 2019). Recognizing this, Honduras and Guatemala have engaged in decentralization processes, adding to the responsibilities of local cities. However, this does not correspond with access to resources, leaving city programs underfunded (Villamarín et al., 2019). In Guatemala local government acquires 20% of government revenues, while Honduran cities acquire 12.1%. In El Salvador, San Salvador is the only municipal entity allowed to coordinate service provision (Maria et al., 2017). Building out social protection programs is a long-term development goal that will require fiscal reforms, including effective taxation (a persistent challenge, particularly in Guatemala, where the tax-to-GDP ratio is 10.5% (World Bank, 2019)).

Within cities that have these shortfalls in resources for services provision, new migrants

may be less likely to secure access to basic services. The “drip” displacements more common in the region (including migrations due to droughts, reduced crop yields and soil salination) may leave people less likely to find resources than those impacted by sudden-onset events like hurricanes. This is partly due to lack of institutional infrastructure to assess and meet their needs, as discussed in section 3.3 above.

Designing, funding and implementing locally-appropriate social protection programs at the city level, that map the needs of internal migrants and facilitate access to services, could be an effective way to improve human security and minimize vulnerabilities that underpin NCA’s urban security challenges. These kinds of inclusive programs can be a resource-efficient investment in prevention, and could also lead to more sustainable outcomes, given the compounding nature of climate, migration and security risks.

3.5 Recommendation: Increase city administrations’ access to climate funds

The majority of climate funds go to national governments; 80-90% of those are typically in the form of loans (OECD, 2021), to countries often deeply in debt. Very few of these funds make their way to city administrations. Recognizing a global gap in urban climate funding on the scale of trillions of dollars, the World Bank initiated the City Climate Finance Gap Fund in late 2020, but at the time of writing the fund does not operate in the NCA region (World Bank, 2021).

Expanding this program and others like it to promote municipal-level access to climate funding, particularly in the form of grants rather than loans, will support cities to address mitigation and adaptation gaps in Central American cities. These are where national emissions are concentrated, and where the nexus between climate vulnerability, internal migration and displacement, and the countries’ major security challenges are most closely entwined.

3.6 Recommendation: Integrate security considerations into urban planning, including Disaster Risk Reduction (DRR) and climate adaptation

Proactive approaches to DRR and adaptation that prioritize the needs of the most vulnerable can prevent displacement, loss of livelihoods and the need for involuntary migration as a final adaptation strategy. Furthermore, these activities present an opportunity to address conditions that underly NCA’s security challenges and promote community stabilization.

There may be opportunities to explore co-benefits between crime prevention through environmental design (CPTED), and climate resilience, to promote safety from climate hazards and criminal activity. One example is promoting public safety and violence prevention through initiatives like UN-HABITAT RISE-UP (Resilient Settlements for the Urban Poor) that address crime, alongside other issues of poverty and climate resilience, livelihoods, political and institutional inclusion, dealing with public safety and marginalization (UN-HABITAT 2019). Efforts to upgrade informal settlements could be more overt about public safety as well as environmental and infrastructure conditions.

Nature-based solutions (NbS) can support both DRR and adaptation in cities experiencing frequent extreme weather events, and can mitigate impacts on informal settlements and vulnerable areas (IPCC 2022/Sandholz et al., 2018; Ronchi and Arcidiacono, 2019).

Urban planners and others shaping NCA’s urban environments should incorporate concepts from the climate resilience and public safety fields, as well as using demographic projections that take future climate-related population movements into account. This applies to both the physical and institutional dimensions of climate adaptation, DRR and urban planning.

3.7 Recommendation: Operationalize good practices for inclusive adaptation and security

All three NCA countries have National Adaptation Plans (NAPs) to guide their responses to climate change. Guatemala's includes a chapter on human mobility, which recognizes climate as a migration driver affecting both urban and rural areas, and sets out objectives to improve data collection, awareness-raising on climate migration interactions, and to integrate environment and migration policy (Government of Guatemala 2018). However, NCA's NAPs face a number of challenges and limitations; these include identifying barriers to adaptation or maladaptation (Dow et al., 2013), insufficient institutional coordination, (Cameron et al., 2015), as well as inadequate financing and access to technology (IPCC, 2022).

Best practices to address these include fostering multilateral cooperation, maximizing synergies across local, national, and international scales, as well as focusing on local empowerment and poverty alleviation (IPCC, 2022/Harvey et al., 2017; Chain-Guadarrama et al., 2018). Top-down approaches to adaptation lacking participation have shown to be less effective than bottom-up approaches driven by social movements (IPCC 2022/Waylen et al., 2015; Bizikova et al., 2016).

Similar good practice principles apply to disaster resilience and supporting urban resilience in contexts affected by chronic violence (Davis, 2012; Sandoval and Sarmiento, 2019), including strengthening both horizontal and vertical relationships between communities and the state. Efforts to promote resilience in informal settlements would benefit from learning from experience, 'bouncing forward' rather than 'bouncing back' from disasters, in order to avoid recreating the conditions that led to initial vulnerabilities, and focusing on addressing underlying social and political conditions (Sandoval and Sarmiento, 2019; Bartels et al., 2020).

A lack of stable financial resources and technical capacity to translate scientific, indigenous and local knowledge into policy has slowed the development of adaptive ecosystem management (IPCC 2022/Bustamante et al., 2020). That said,

there has been a proliferation of ecosystem-based adaptation (EbA) and community-based adaptation (CbA) approaches. CbA approaches have found institutional and political advocates in NCA, especially El Salvador, but they are often poorly coordinated or even at odds with policies on development and land planning (IPCC 2022/Ryan, 2012).

3.8 Recommendation: Sensitize counter-gang programming and urban security planning to the broader implications of the climate crisis

Addressing the structural factors that give rise to organized crime could benefit from being approached in a climate-sensitive way. Considering how climate impacts might intersect with uneven socioeconomic development, marginalization and social exclusion, as well as migration and its impact on social cohesion and family structures, could make these efforts more resilient to pressures and disruptions indirectly related to climate impacts.

Foresight tools such as scenario exercises could bring together different communities of practice at the municipal or local level, to explore possible futures and needed policies.

For those planning social outreach strategies for gangs and gang members, considering the broader impacts of climate change on cities, specific economic sectors, and future national budgets, may help to create more effective and sustainable programming. These include issues around urban infrastructure, population distribution and migrant flows, and disaster vulnerabilities and response needs, particularly in those communities most affected by gangs. Such work could potentially include elements of resilience-building, for example through adaptation of the built environment, or efforts to repair the social fabric and strengthen community institutions.

The security community (police, military, intelligence) should improve understanding of this nexus and its implications for domestic and regional security over their planning horizons (2030s-2040s), and develop policies for countering threats without undermining resilience. Security Sector Governance/ Reform (SSG/R) processes are an entry point for integrating climate security risk management good practices, to prioritize human security, and avoid counterproductive responses and “securitizing” climate change (DCAF, 2021).

Institutions and processes that facilitate security cooperation, such as the Organization of American States (OAS) Secretariat for Multi-Dimensional Security and the Ministerial Meetings on Public Security, could be forums for raising awareness on how climate change, migration and security interact in urban settings, and defining the role the security sector should play in broader government strategies. OAS’s Inter-American Defense Board has previously expressed interest in raising the profile of climate security; this could be an opportunity for both South-South and North-South exchanges on how to best support human and national security in a climate-changed future, by improving disaster response, supporting civil authorities in crises, and countering transnational threats.

Conclusion

This review of literature on climate change, migration, and security in the context of urbanization in NCA has sought to illustrate the ways in which these challenges are interconnected, define research gaps at this nexus, and outline approaches to more comprehensively address NCA’s core human security issues.

As climate change and urbanization drivers accelerate in NCA, designing programming that maximizes co-benefits for climate resilience, public safety, institutional capacity-building, state legitimacy, and social inclusion will likely be more resource-efficient and sustainable over the medium-term. Current and future climate finance flows present an opportunity to address underlying factors for vulnerability and human insecurity, which drive displacement, migration, and violence in rural and urban settings. Supporting sustainable livelihoods and

job creation, with a focus on youth inclusion and meeting the needs of migrants, could yield multiple benefits at the climate, migration, and security nexus in NCA and its cities.

NCA’s challenges are substantial, given the deep-rooted drivers of fragility and insecurity that affect vulnerability at this nexus. The resources and capacities available to address the region’s human security and climate resilience needs may not be sufficient to meet the demand, but more joined-up responses could help to maximize positive outcomes for these countries.

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