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Resilient human development to overcome the inequality-disaster-inequality cycle

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Resilient human development to overcome the inequality-disaster-inequality cycle

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Key messages

1. Inequality and disasters are two mutually reinforcing factors that diminish human development in the region. Inequality amplifies the impacts of disasters, and, in turn, disasters deepen existing inequalities. This occurs because disaster risk is endogenous to existing development processes, and its distribution is conditioned by political, social, and economic factors that are often linked to the distribution of resources.

2. The relationship between disaster and inequality unfolds across three interrelated dimensions, that together produce an inequality–disaster–inequality cycle. First, there is unequal exposure to disaster risk, driven primarily by unplanned urbanization processes that push the poorest into hazard zones. Second, there is unequal vulnerability, whereby the population with fewer economic resources loses a greater proportion of its assets. Third, there is a resilience gap across socioeconomic strata. This refers to an unequal capacity for post-disaster recovery, where households with greater financial assets recover faster, while poorer households face slow processes that can permanently damage their well-being.

3. This policy document proposes a series of recommendations to transition toward disaster risk management integrated into development processes. These recommendations are structured around the three–"I" framework for resilient human development—instruments, institutions, and infrastructure—(UNDP, 2025) and are distributed among initiatives and investments for prospective, corrective, and compensatory disaster risk management (UNDRR, 2024).

Introduction

Latin America and the Caribbean (LAC) is going through a critical moment in its development trajectory. In a context marked by more intense and erratic events driven by climate change, combined with increasing vulnerability, the region faces growing pressures on its productive, fiscal, and social capacities. Disasters do not occur in a vacuum; instead, they overlay persistent structures of inequality that characterize the region, creating a scenario in which risks increase and are simultaneously distributed unequally.

In this context, disaster risk and inequality are not independent forces. On the contrary, they are a deeply interconnected system shaped by economic, political, and institutional decisions, where pre-existing conditions determine who is exposed, who is most vulnerable, and who has better capacity to recover. The impacts of disasters tend to reinforce these inequalities, generating a feedback loop that limits human development and widens existing gaps, creating poverty traps.

This process is far from marginal. The recurrence of events, their cumulative impacts, and the associated costs—often underestimated in traditional metrics—are progressively eroding people's well-being and the fiscal space of governments. At the same time, the persistence of reactive approaches to risk management, along with biases in resource allocation that predominantly favor compensatory measures, limits the ability to anticipate and mitigate these impacts, thereby reinforcing unsustainable development trajectories.

This policy document builds on the *Regional Human Development Report* (RHDR) 2025 and the *Disaster Risk Assessment Report in LAC 2024* (RAR24), published by the United Nations Development Programme (UNDP) and the United Nations Office for Disaster Risk Reduction (UNDRR), respectively, and aims to analyze the interactions between inequality and disaster risk in the region, as well as their implications for human development. The former advances the conceptualization of resilient human development as a response to a period of growing uncertainty and multiple crises, while the latter offers analysis and recommendations aimed at strengthening financing mechanisms and instruments for inclusive and sustainable investments in Disaster Risk Reduction (DRR), considering its prospective, corrective, and compensatory dimensions.

In this policy document, the concept of Resilient Human Development is particularly relevant. It seeks to "enable people to enjoy valuable lives in terms of capabilities and agency in such a way that the impact of critical shocks on their lives is prevented or mitigated and that people and communities, especially the most disadvantaged, can shape their lives and, if adversity strikes, in time rebound and flourish again" (UNDP, 2025: 63). However, this aspiration is limited when such capabilities and opportunities are distributed unequally. Overcoming this challenge requires understanding the endogeneity of risk within development processes to prioritize equity and human well-being in the building of disaster resilience and, conversely, to prioritize disaster resilience in inequality reduction actions.

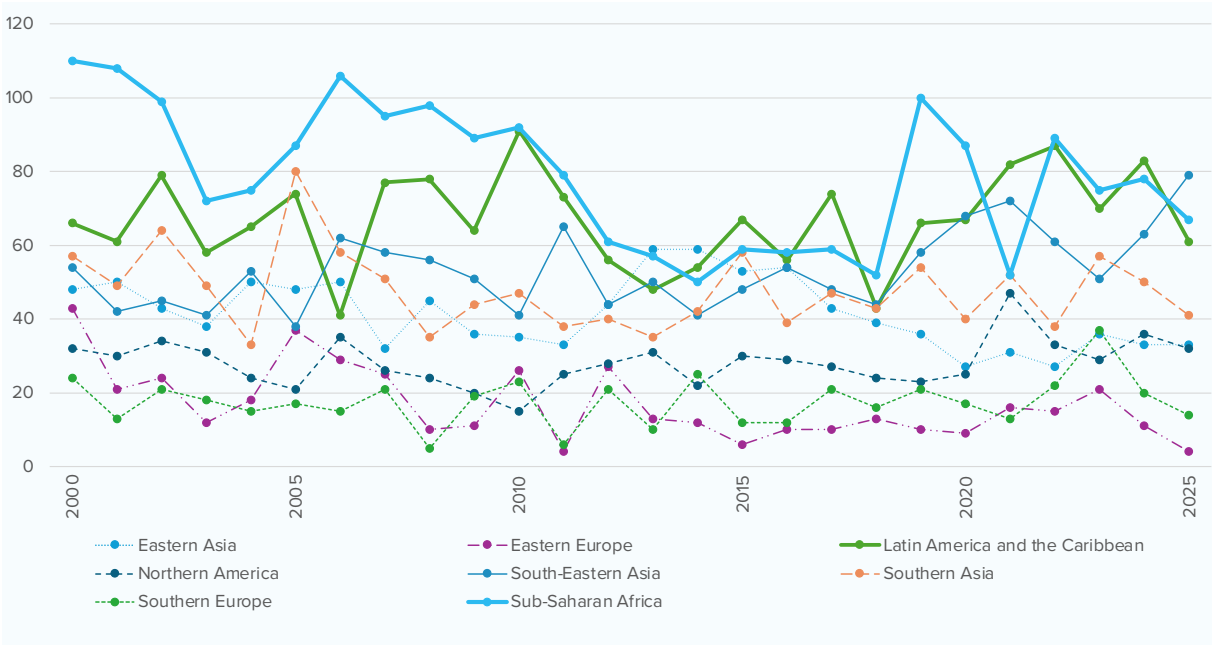
This document begins with the premise that the effects and impacts of disasters are not distributed evenly. Populations living in poverty, in highly exposed areas, or with limited access to basic services and social protection face more severe losses and slower recovery processes. Furthermore, **the recurrence and overlap of events generate compound risk dynamics, where impacts chain together and deepen, amplifying vulnerabilities, particularly among the most exposed populations.** Analyzing these dynamics and their implications is the central focus of this document.

The document is divided into three main sections. The first presents a diagnosis of the region as a space under increasing pressure, characterized by the growing impact of climate-related disasters and their cumulative costs. The second section analyzes the bidirectional relationship between inequality and disasters, showing how both phenomena reinforce each other and affect human development trajectories. The third section examines the mechanisms that shape the unequal distribution of risk, addressing exposure, vulnerability, and the resilience gap, and showing how these dimensions operate in an interrelated manner. Based on this analysis, the document lays the groundwork for a policy agenda aimed at integrating DRR into strategies for resilient and inclusive human development.

1. A Region Under Pressure: Rising Climate-Related Disasters and Their Cumulative Costs

Between 2000 and 2025, LAC has remained one of the world's most disaster-prone regions. During this period, it recorded an average of 67 disasters per year, compared to 79 annual disasters in Sub-Saharan Africa, the region with the highest incidence (Figure 1). Likewise, LAC is the region with the second-highest risk in terms of expected annual relative multi-hazard losses related to infrastructure—at approximately USD 58 billion (CDRI, 2023). These elements not only reflect high exposure to different hazards but also a growing structural pressure on human development trajectories.

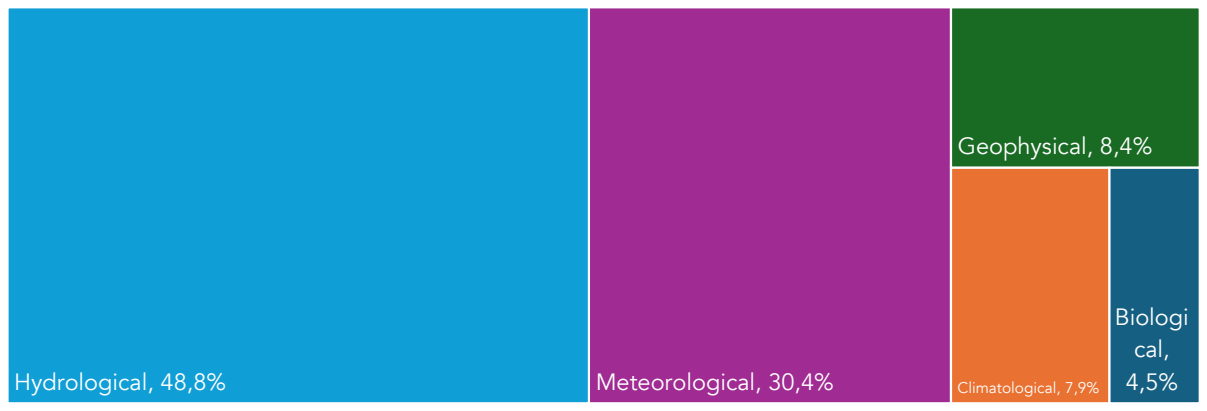
Figure 1. Over the past century, LAC has remained the region with the second-highest number of disasters



Source: Authors' own elaboration based on EM-DAT.

Between 2000 and 2025, the region recorded 1,741 disasters, of which 87% were climate-related. Among these, hydrological events (including floods and landslides) accounted for nearly five out of every ten disasters, while meteorological events (including storms and extreme temperatures) accounted for approximately three out of every ten. To a lesser extent, geophysical disasters (such as earthquakes, landslides, and volcanic activity) and other climatological events (such as droughts, glacial lake outburst floods, and wildfires) were recorded. This pattern confirms that the disaster profile in the region is increasingly determined by climate dynamics, thereby intensifying their systemic and persistent nature.

Figure 2. Nearly 9 out of 10 disasters in Latin America and the Caribbean over the past quarter-century have been climate-related



Source: Authors' own elaboration based on EM-DAT.

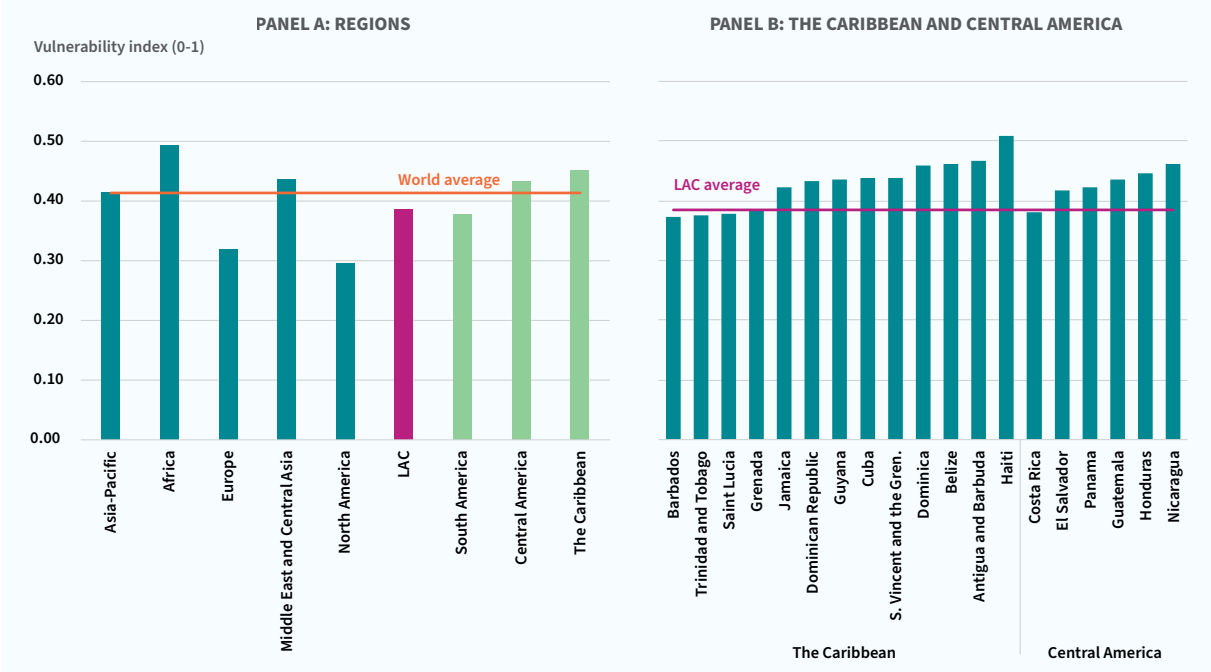
The prevalence of climate-related disasters in the region is linked to increased exposure and vulnerability to critical events associated with the variability in the patterns of such events and their connection to climate change.

The predominance of climate-related disasters in the region is associated with greater exposure and vulnerability to critical events related to variability in climate event patterns and their relationship to climate change. Estimates by UNDRR, UNFPA, and Harvard University (2025) show the proportion of people exposed to medium and high levels of hazards in the region. For example, 1 in 5 people is exposed to seismic hazards, 1 in 6 to hurricane hazards, and 1 in 10 to flood hazards, in all cases at medium and high levels.

According to the Notre Dame Global Adaptation Initiative (ND-GAIN) Vulnerability Index[1], LAC exhibits lower vulnerability to climate-related shocks and hazards than other regions; however, there are countries in Central America and the Caribbean that present significantly higher levels, highlighting the critical hotspots within the region (Figure 3). The challenge for human development is to ensure that resilience is not a privilege of the wealthiest nations and communities, as this would only widen the impacts of the climate crisis and inequality.

1 The index assesses countries' vulnerability and preparedness in the face of climate-related shocks, as well as their capacity to respond (ND-GAIN, n.d.). Vulnerability measures the propensity or predisposition of human societies to be negatively impacted by climate threats, considering exposure, sensitivity, and adaptive capacity separately. Threats are assessed across six vital sectors: food, water, health, ecosystem services, human habitat, and infrastructure.

Figure 3. Central America and the Caribbean face higher climate vulnerability compared to other regions



Source: UNDP, 2025.

The Rising Cost of Disasters in the Region

Beyond exposure, climate events in LAC are generating cumulative impacts that progressively erode the region's productive, fiscal, and social capacities. Some of the immediate effects of increased disaster frequency include a decline in potential growth due to losses and damage; growing pressures on public finances, and the intensification of vulnerabilities among highly exposed and severely deprived populations. The recurrence of events increases indebtedness, and prioritizing resources toward response at the expense of prevention reinforces cycles of unsustainable development.

The cumulative impact between 2000 and 2019 exceeded $300 billion in direct damages in the region, affecting 152 million people (UNDP, 2025). During this period, annual losses amounted to 1.7% of regional GDP (UNDRR, 2023). In the Caribbean, the figure rises to 3%, reaching extreme cases such as that of Dominica in 2017, where the impact of Hurricane Maria alone accounted for 226% of its GDP (UNDRR, 2023).

It is fundamental to consider that these official statistics are conservative, as they usually only account for direct damages and omit the "missing millions" due to the cascading impacts of disasters. For example, according to CDRI (2025), the economic costs of infrastructure failures are 7.4 times higher on average than the direct damage to physical assets. The total costs of disasters globally, including cascading impacts on health, education, ecosystems, and supply chains, are estimated at $2.3 billion annually—nearly ten times the direct losses (UNDRR, 2025). When expected losses are measured in terms of human well-being or a decline in consumption, they are typically 60% higher than the expected losses

in assets on which conventional statistics focus (Bangalore et al., 2017). These figures demonstrate how disasters not only generate isolated losses but, through their direct and cascading impacts, compromise macroeconomic stability and the fiscal space necessary to sustain development policies.

The economic impact of these events and their recurrence strain public finances, forcing an increase in sovereign debt. The Asian Development Bank (ADB) studied the fiscal impact of disasters using a panel of 184 countries for the period between 1995 and 2021, calibrating the simulation with parameters from emerging market economies, such as many of those in LAC. The results show that, among the countries considered, sovereign debt rises by nearly 2% of GDP in the two years following a disaster (ADB, 2024). The causes of the worsening fiscal balance are the decline in tax revenues and the increase in reconstruction expenditures, which also causes an investment shift toward government bonds to the detriment of productive investment (ADB, 2024). This crowding out of resources limits the ability of governments to invest in strengthening human capabilities, particularly in key sectors such as health, education, and social protection.

The landscape of disaster risk as a systemic and cumulative process allows for the identification of three downward spirals of unsustainable development. According to UNDRR (2025), the first spiral begins with recurrent disaster losses that deplete national assets and reduce household income, driving the country into debt. This debt, combined with financial uncertainty, elevates the cost of capital and drains the resources needed to invest in prevention. In a second spiral, the rising impact of disasters and increasing debt heighten fiscal pressure, widening the fiscal gap between countries. The fact that a large part of the financial burden is shifted to States is largely due to low insurance penetration and rising premiums. But this does not only affect national finances; when there are no insurance or insurance companies take long to pay compensation, individuals must absorb the losses, slowing down economic activity and overall recovery. Finally, the two previous spirals cause financing to concentrate disproportionately on disaster response rather than resilience. Without addressing underlying vulnerabilities, these become magnified, and each new event destroys what was rebuilt, perpetuating a cycle of disaster-response-repetition characterized by a process of rebuilding vulnerability. Therefore, disaster impact is not an isolated phenomenon, but a determining factor in development processes.

Figure 4. The three downward spirals of (un)sustainable development

Decrease of income, increase of debt

Increase of fiscal pressure, development policies at risk

Intensification of disaster-response-repeat cycle

Source: UNDRR, 2025.

Box 1. Barbados and the Macroeconomic Impact of Disaster

Barbados exemplifies the vulnerability of Small Island Developing States (SIDS), where the disruption of a critical asset can destabilize the entire economic system. With 45% of its population living less than 5 kilometers from the coast and an economy dependent on tourism and trade, CDRI modeled the impact of infrastructure failures using the Green Economy Model (GEM), calibrated with the GIRI index.

While the average economic cost of infrastructure failures is 7.4 times higher than direct damage across the studied cases, in Barbados it is 11.3. This is due to the cascade effect, which occurs when critical infrastructure is damaged (especially energy, water, and transport). Once some of the services provided by critical infrastructure are disrupted, the lifeline of strategic sectors such as tourism and commerce also comes to a standstill. This causes economic activity to halt far beyond the service directly impacted by the disaster initially.

According to the GEM, Barbados will face an average annual loss of 6.9% of its GDP between 2025 and 2050 solely due to infrastructure failures, a figure that is projected to rise to 9.5% by 2050. In a scenario of full climate impact (including damage to land, livestock, and people), average annual losses rise to 8.8% of GDP (reaching 13.3% in 2050).

Consequently, disaster compromises the country's productivity and diverts resources in the long term. Failures in electrical grids paralyze industries and services, and damages to ports and roads block products from accessing the market, weakening the country's competitiveness. For every year that infrastructure remains damaged, the country suffers a cumulative loss of productivity. Furthermore, the resources dedicated to reconstruction deplete national reserves and increase public debt, reducing the capacity to respond to future events.

Source: CDRI, 2025

Imbalance in disaster risk reduction investment

Currently, the prevailing view of "disaster as an outcome" rather than "risk as a process" continues to dominate disaster risk management, leading to a concentration of resources on emergency response and reconstruction. According to the RAR24, this implies an imbalance in the types of investments in resilience, where compensatory management (addressing post-disaster impacts) takes precedence over prospective investments (preventing the creation of new risks) and corrective investments (reducing existing risk).

This compensatory management of risk compromises prospective action for DRR, leaving unaddressed the systemic impacts that already threaten the viability of strategic sectors. In the Caribbean alone, the exposure of critical infrastructure to coastal flooding due to sea-level rise could result in annual losses of between $22 billion and $46 billion by the end of the century (Contreras, 2022).

In Central America, the lack of climate adaptation threatens the foundation of livelihoods, with projections indicating a 35% to 50% decline in the yields of corn, rice, and beans by the year 2100 (ECLAC, 2015). This would severely affect consumers due to price increases, but also the farmers of these crops who,

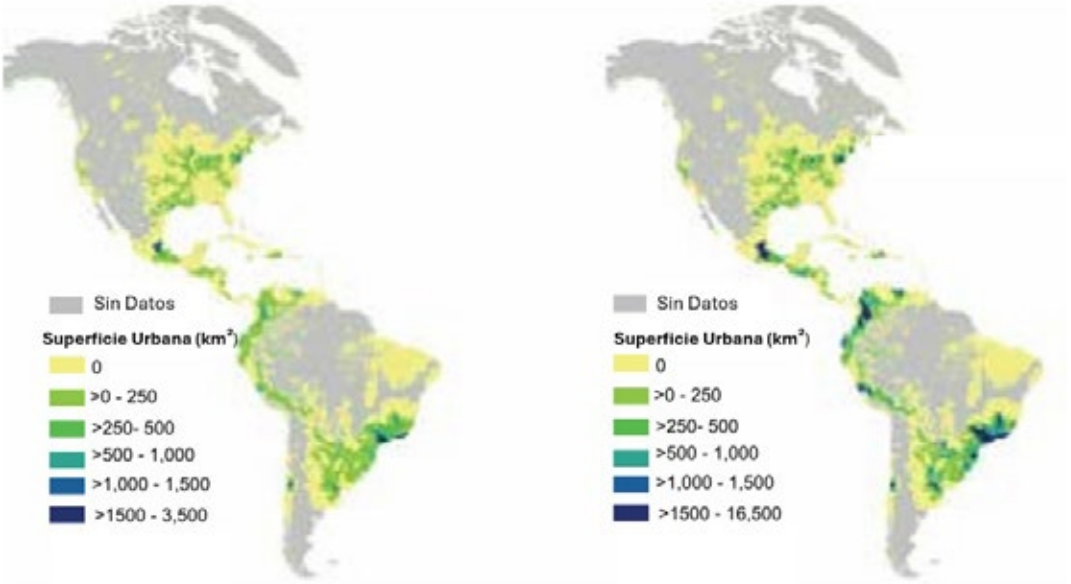
despite their essential role, are already a vulnerable population due to being primarily smallholder indigenous owners with low schooling levels, representing 52% of the subregion's rural population (ECLAC, 2010).

The deficit in prospective and corrective investments also jeopardizes regional energy security, given that over 50% of energy produced comes from hydropower, a sector that is highly vulnerable to increasing rainfall variability (IDB, 2016). This risk is also critical in the Andean region due to accelerated glacier melt; in Peru, for example, glacial retreat and the alteration of the hydrological cycle could result in annual cost of between $212 million and $1.5 billion for power generation alone (ECLAC, 2015). The same applies to Ecuador, which during 2024 faced a severe power crisis due to a combination of prolonged drought (which drastically reduced hydropower generation, the country's primary source), thermal capacity constraints, and system management issues (UNDP, 2025).

Another factor increasing disaster risk is unplanned urban growth and informal construction. In Central America, it is estimated that without further investment, this problem will double earthquake losses by 2050, reaching USD 4.4 billion (UNDRR, 2024).

As shown in Figure 5, global projections for 2030 suggest that the global urban area under threat of flooding— without accounting for the effects of climate change—will multiply by 2.7, and nearly half of this urban growth will occur in areas with a high frequency of flooding (UNDRR, 2021). This increase is not only a consequence of population growth but also of a trend toward expansion into higher-risk areas; in fact, almost half of this new growth will occur in areas with a high frequency of flooding (UNDRR, 2021). In addition, urban land exposed to droughts will double (UNDRR, 2021).

Figure 5. Urban land in areas with a high frequency of flooding in 2000 and 2030



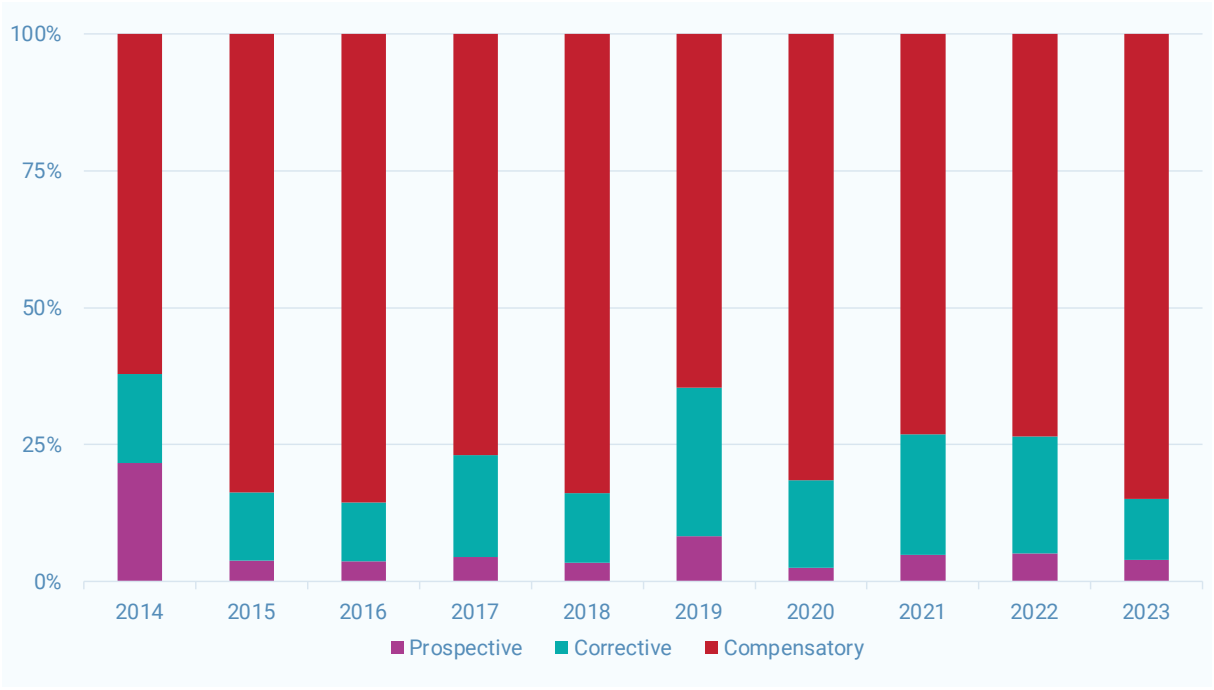
Source: UNDRR, 2021

The effects of climate change and disasters in depleting strategic resources—such as vital infrastructure, staple grains, energy availability, or land—also threaten to increase inequalities as they are subject to market dynamics. Without market regulations or compensatory measures, lower-income groups could be disproportionately affected.

Biases in Resilience Financing

Despite the growing number of disasters, less than 1% of Official Development Assistance (ODA) allocated to LAC is directed toward actions that explicitly reduce risk. The case studies of the RAR24 confirm that this trend also extends to the national level, as national budgets dedicated barely around 1% to risk reduction, with the majority allocated to emergency response (compensatory action) (UNDRR, 2024). This gap between the risk profile and resource allocation reveals a structural misalignment in disaster risk management that underestimates its cumulative nature.

Figure 6. Distribution of the national budget for disaster risk reduction by type of management (selected LAC countries)



Source: UNDRR, 2024.

Therefore, it is imperative to move beyond the view of disaster risk and its distribution as something hazardous or inevitable, and to assume responsibility for its management and reduction. This requires recognizing that the exponential evolution of risk is closely linked to unequal development and weak governance, that marginalizes a large part of society, allowing risk to accumulate over time. To address this, it is necessary to coordinate mitigation, prevention, recovery, and reconstruction with development processes and equality policies, integrating resilience and sustainability as a priority. This will enable bridging the agendas of disaster risk reduction, climate change adaptation, and socioeconomic development agendas. From this perspective, investments in disaster risk reduction not only decrease future losses but also serve as tools for reducing inequality.

This integration is fundamental to breaking the cycle of disaster-response-repetition, which consumes vital resources for sustainable progress and, given the increasing intensity and frequency of certain disasters, tends to become a development trap. All these elements illustrate that disasters do not only destroy assets, but also directly erode people's well-being and capabilities, disproportionately affecting those who are already in situations of greater vulnerability. In a context of increasing disaster impacts, the challenge is not merely to respond to their effects, but to anticipate and manage them effectively, preventing them from operating as mechanisms that consolidate unsustainable development trajectories and deepen pre-existing inequalities.

2. Disaster Risk and Inequality

The *2019 Human Development Report*, which focused on 21st-century inequalities, argued that disasters and climate change act as catalysts for pre-existing inequalities. In this sense, the challenge for human development is to ensure that resilience is not uniquely the privilege of the wealthiest nations and communities, as this would only deepen the impacts of the climate crisis and disasters.

Data confirms that inequality acts as a multiplier of disaster victims: A 1% increase in the Gini coefficient in countries in the 75th percentile of the global distribution of the Gini Index (such as Brazil, Colombia, Panama, Costa Rica, Chile, Paraguay, Honduras, Guatemala, Mexico, Peru, and Ecuador) causes the number of people affected by disasters to increase by 3.7% more than in the most equitable countries in the 25th percentile (Capelli et al., 2021). This illustrates the dynamics of the "double hit" of disasters, whereby lower-income households face greater pressures in areas exposed to higher disaster risk and have fewer resources to recover. During economic slowdowns, this "double hit" tends to deepen inequalities within emerging economies (Budina et al., 2023).

Understanding the dynamics between inequality and disaster risk is fundamental to designing public policies that build more resilient societies. Currently, conventional metrics for estimating asset losses are widely used to inform investment decisions in risk reduction. However, these metrics have limitations, as they conceal the socioeconomic impacts of disaster risk on affected and vulnerable communities (UNDRR, 2025).

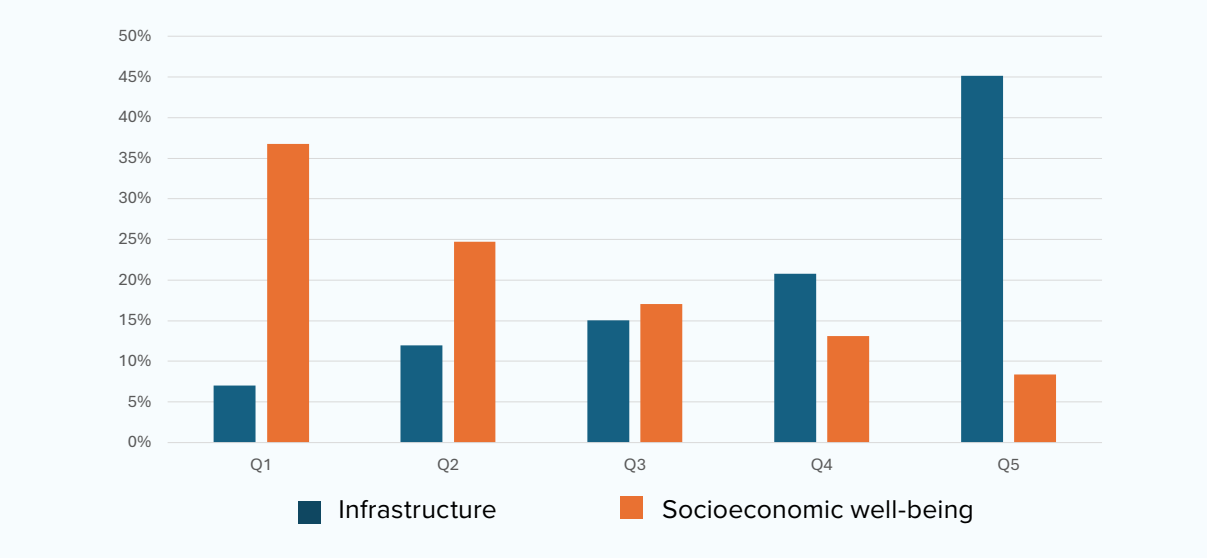
The socioeconomic well-being metric, which primarily measures the reduction in consumption, offers a complementary alternative. The overall estimate is that every dollar of asset loss risk from disasters translates into an average well-being loss risk equivalent to two dollars, which can vary depending on the socioeconomic resilience of the country and the household (Middelanis et al., 2025). Behind this average lies an unequal distribution of risk. While risk to physical capital tends to cluster in higher-

income households, well-being losses disproportionately affect the poorest. Figure 7 shows that in LAC, the poorest quintile (20% of the population) is assigned only 7% of asset risk but bears 37% of expected well-being losses (Middelanis et al., 2025).

These dynamics are not gender-neutral. Women, particularly those in poverty or in the informal economy, face greater exposure to well-being losses due to lower income levels and disproportionate impacts from extreme climate events—for example, exposure to an additional day of extreme temperatures or heavy rainfall is associated with income reductions of 1.3% and 0.5%, respectively, in female-headed households, translating into average annual losses of up to 8% for extreme heat and 3% for floods—as well as limited access to productive and financial assets and a heavier burden of unremunerated care work, which tends to intensify in disaster contexts, restricting their recovery capacity (FAO, 2024).

Relying solely on avoided asset losses can disincentivize interventions targeted at lower-income households, worsening inequality between social strata and leaving the human security of a significant portion of the population unaddressed.

Figure 7. Distribution of expected losses by quintiles (LAC average)



Source: Authors' elaboration based on Middelanis et al., 2025

Furthermore, this approach overlooks the fact that investments of lower economic value can increase the human well-being of more people and increase overall resilience more effectively (Bangalore et al., 2017). Enhancing well-being, primarily for the poorest population, can take many forms, such as reducing income losses, school absenteeism, childhood stunting, or even disease transmission in the case of pandemics.

The predominant use of metrics based on direct losses in infrastructure, which are biased in favor of higher- income populations, is a manifestation of a systemic problem to the detriment of the most vulnerable populations, but it also represents a structural problem of power and resource control. As a result, decisions by actors with greater economic weight tend to shift risks toward the most vulnerable groups (CDRI, 2023).

For example, the deforestation process in Honduras, decades before Hurricane Mitch in 1998, had severe repercussions by increasing landslides and floods due to the removal of protective vegetative cover, gravely affecting urban and rural territories populated by the poor (Lavell, 2025). This process continues to exist widely today. In 2024, during the Amazon fires, the most affected were indigenous communities and residents of rural and riverine areas. It is important to note that a large portion of Amazonian fires are caused by human activity, primarily as a result of land clearing and deforestation (UNDP, 2025).

In this context, **disaster risk is not merely a consequence of natural conditions, but the result of economic, institutional, and political decisions that determine who is exposed, who is vulnerable, and who is better positioned to recover.** When these dynamics are not addressed, disasters cease to be isolated events and become persistent mechanisms for the reproduction of inequality. Addressing this interaction requires, therefore, going beyond disaster risk management as a technical problem, and incorporating a perspective that places equality and well-being at the center of resilience strategies. On this basis, the next section examines the concrete mechanisms through which these inequalities are configured and deepened over time by the risk and impact of disasters.

3. Unequal Distribution of Disaster Risk

Inequality and disaster risk are not independent phenomena; they are closely linked, forming a system in which underlying conditions determine how disasters affect people. The interaction of three dimensions creates *inequality traps*—feedback loops in which pre-existing deprivations reinforce one another, limiting opportunities. These dimensions are unequal exposure, unequal vulnerability, and the resilience gap. None of these dimensions are gender-neutral, as structural inequalities between men and women—including unequal access to resources, assets, time, and opportunities—influence how risk is distributed and experienced.

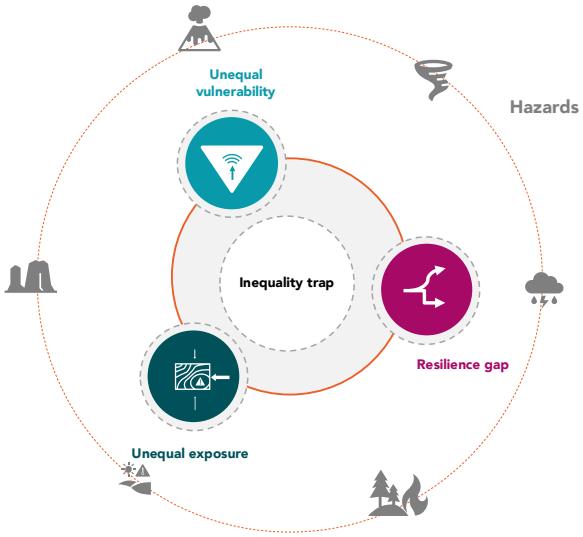
Unequal exposure reflects how poverty and the geographical and social distribution of risk determine who bears the greatest burden even before a disaster occurs. Low-income households, rural communities, and residents of informal settlements, among others, are often located in areas more prone to hazards (such as floodplains, unstable slopes, or drought prone regions) due to economic constraints, land market dynamics, or historical processes of exclusion. This exposure is not random; it stems from spatial segregation that pushes lower-income groups toward hazard-prone areas because these are the most affordable.

Unequal vulnerability refers to the differential capacity of individuals and communities to withstand and absorb the impacts of a disaster once it happens. Poor people are more economically vulnerable to disasters because they are less protected and, in relative terms, stand to lose a greater proportion of their assets when these events occur. These factors amplify the impact of disasters, further exacerbating their pre-existing precarious conditions.

The **resilience gap** reflects differences in the capacity to recover and adapt after a disaster. Households with access to savings, credit, insurance, or support networks can rebuild their livelihoods more quickly, whereas those without these mechanisms face slower and more uncertain recovery processes. At the aggregate level, these gaps are also reflected in the capacity of states to respond and rebuild, depending on their fiscal space, institutional strength, and access to financing.

Furthermore, **gender inequalities** exacerbate existing gaps. Globally, in 2024, only 46.4% of working-age women were employed, compared with 69.5% of men. At the current rate, it would take more than 190 years to close this employment gap (ILO, 2025). These inequalities translate into higher levels of poverty and vulnerability: women and girls are overrepresented among people living in poverty, and women aged 25 to 34 are 25% more likely to live in extreme poverty (UN Women, 2024). In addition, nearly 2 billion women and girls lack social protection. This deficit is more pronounced in fragile contexts and worsens women's situations across the three dimensions of the inequality trap, limiting their ability to anticipate, absorb, and recover from shocks. Compounding these challenges is the heavier burden of unpaid care work, which restricts women's economic autonomy and reduces their resilience.

Figure 8. Disasters and Inequality Traps



Source: Authors' elaboration

The interaction of these three dimensions give rise to cumulative risk dynamics, in which exposure, vulnerability, and limited resilience reinforce one another. In LAC, this cycle is exacerbated by recurring hazards, as shown in the first section of this document. The increasing intensity and variability of climate and socio-environmental events represent a new normal of disruption and uncertainty, which, layered on top of pre-existing structural vulnerabilities, further compounds existing risks (UNDP, 2025).

Crucially, the recurrence of disasters in vulnerable areas shortens recovery times, progressively erodes household assets, and reduces the capacity of public systems to respond effectively. As a result, impacts not only accumulate but are amplified.

Unequal Exposure

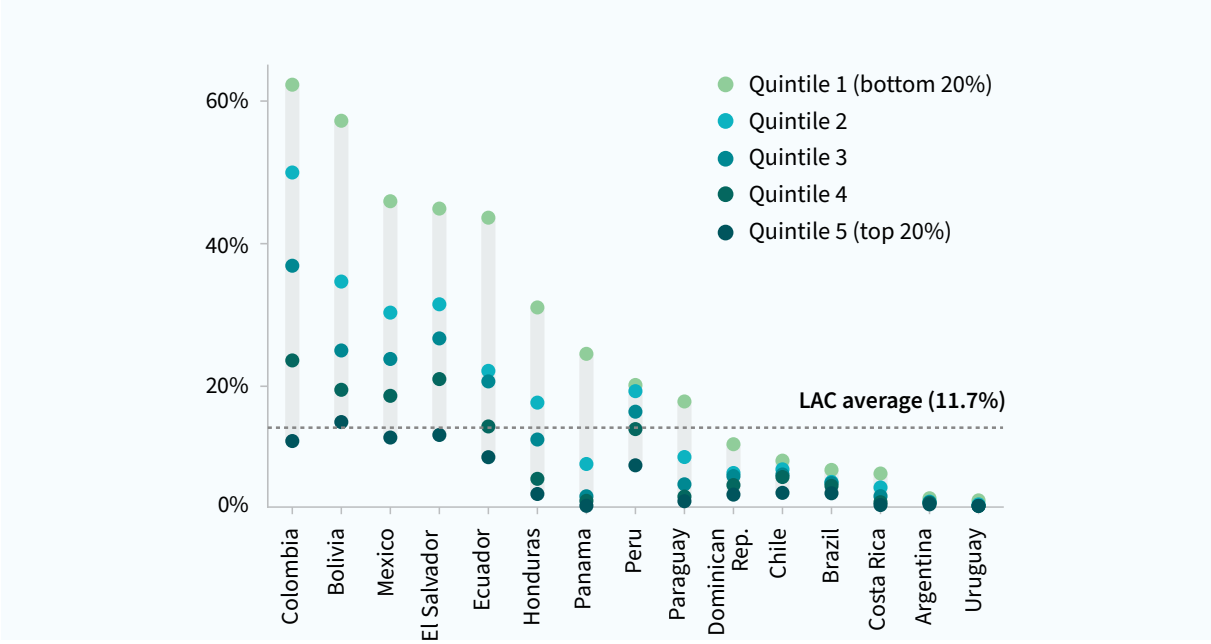
In Latin America and the Caribbean, people living in poverty—and their assets—face greater exposure to hazards as a result of distinct yet complementary mechanisms in urban and rural contexts. In cities, this exposure stems from patterns of spatial segregation that push lower-income households into high-risk areas because these are the most affordable. In rural settings, however, exposure stems from structural dependence on climate-sensitive activities, such as agriculture, which directly exposes the productive assets of communities to variations in temperature, precipitation, and water availability.

Urban exposure takes on particular significance in a predominantly urban region like LAC, where 82% of the population lives in cities and nearly one in five people live in informal settlements (UNDRR, 2021). These trends reflect not only urban expansion but also a shift in poverty, which is increasingly concentrated in urban settings. Indeed, the proportion of poor people living in cities has risen steadily, from 66% in 2000 to 73% in 2022 (UNDP, 2024).

Spatial segregation is the result of rapid, unplanned, and irregular urbanization, as well as environmental degradation, which together generate new socio-natural hazards (UNFPA & UNDRR, 2025). As a result, these communities often settle on unstable terrain—such as hillsides, ravines, or flood-prone areas—because of barriers to accessing the formal housing market (ECLAC, 2021). The absence of land-use planning that integrates risk management, coupled with poorly regulated market dynamics, constitutes a key structural obstacle that perpetuates unequal exposure.

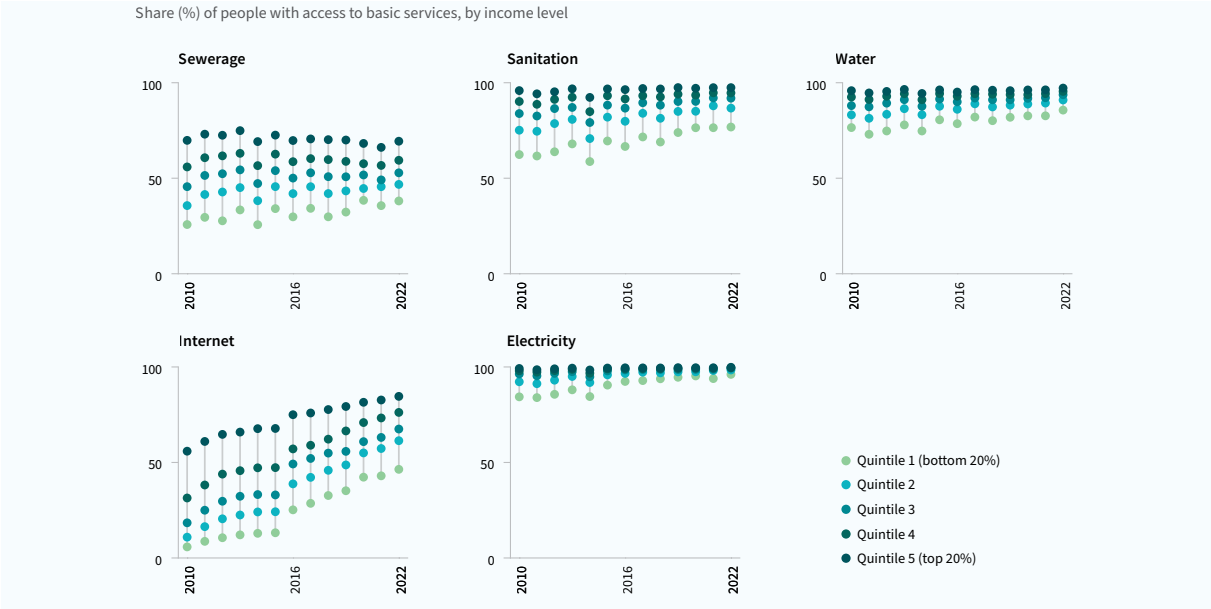
This inequality is also reflected in housing quality and access to services. The poorest quintile in the region is 1.8 times more likely to live in “fragile” housing than the average (Hallegatte & Walsh, 2021), a condition that depends not only on building materials but also on the urban environment, service provision, and connectivity (UNDP, 2025). Inequalities in access to drinking water, sanitation, and basic infrastructure further exacerbate exposure to risk.

Figure 9. Share (%) of housing built with low-quality materials by income level



Notes: The chart displays the most recent available data for each country: Argentina, Costa Rica, Ecuador, El Salvador, and Paraguay (2023); Brazil, Chile, Colombia, Dominican Republic, Mexico, Uruguay, and Peru (2022); Bolivia and Panama (2021); and Honduras (2019). The regional average is calculated as a simple average of the share of poor quality housing reported by SEDLAC.
Source: UNDP, 2025.

Figure 10. Share (%) of people with access to basic services, by income level

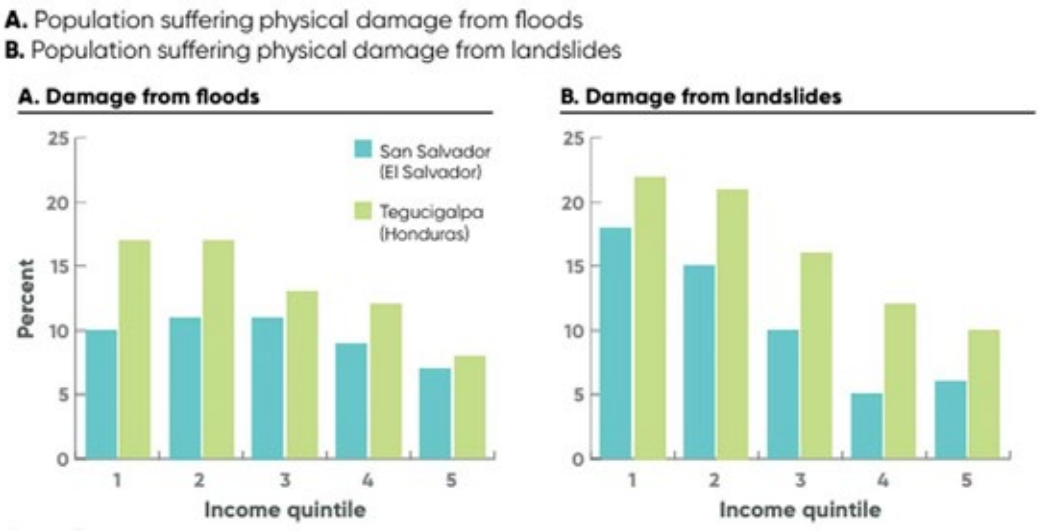


Notes: Regional averages for Internet access are from ECLAC. Averages for other services are simple averages of annual country data from SEDLAC, subject to availability.

Source: UNDP, 2025

The fragile dynamics among lower-income populations have been documented in multiple urban contexts across the region by Bangalore (2017), who shows how exposure to risk is unevenly distributed within cities. For example, in Santo Domingo, while the risk of flooding is just 6% in the higher-elevation areas where households with greater purchasing power are concentrated, it jumps to 45% along riverbanks, where the lower-income population lives. In San Salvador and Tegucigalpa, those in the lowest income quintiles are two to three times more likely to experience flooding or landslides than their higher-income neighbors.

Figure 11. Exposure to flood damage by income level in San Salvador (El Salvador) and Tegucigalpa (Honduras) in 2002



Source: Bangalore, 2017.

Similarly, Bangalore (2017) reports that, in Panama, vulnerability to flooding is 50% higher for the poor, while in Bogotá, seismic risk is twice as high for low-income residents. These patterns are repeated in various cities across the region, such as Caracas, Rio de Janeiro, and Medellín, where informal settlements tend to proliferate on unstable slopes or in areas near bodies of water or with poorly maintained drainage systems, revealing a systematic pattern of risk localization associated with economic inequality.

The quality and distribution of urban infrastructure are shaped by investment and governance decisions that ultimately concentrate the most marginalized social groups in the riskiest areas. These areas undergo a silent accumulation of risk from low-intensity events, and, because of their poor documentation and limited public attention, their inhabitants are placed in increasingly unsafe and irreversible situations. Together, these processes shape a geography of inequality, in which location becomes a key determinant of risk, reinforcing persistent patterns of exposure that shape the trajectories of human development. In fact, since most events affecting the region are low in severity but high in frequency—such as small floods or localized landslides—their impacts are associated with conditions of inequality and poverty rather than with the magnitude of the phenomenon itself (UNDRR, 2021).

Although more extensively documented in urban settings, inequality also manifests in rural contexts through different dynamics. In these settings, exposure to risk is defined not only by geographic location but also by the dependence on livelihoods that are highly sensitive to climate, such as agriculture. This dependence creates a form of exposure in which variations in temperature, precipitation, and water availability directly affect production, income, and household living conditions.

The lack of access to basic services in these settings is compounded by instability in productive infrastructure, water and food insecurity, and limited access to natural resources. Unlike urban contexts, where exposure to risk is determined by location, infrastructure, and services, in rural areas it is closely linked to the stability of the natural systems on which livelihoods depend.

Climate change and natural disasters have significantly reduced agricultural productivity in Latin America and the Caribbean. It is estimated that climate change has contributed to a 25% reduction in total agricultural productivity growth since 1961, particularly in warmer regions (Ortiz-Bobea et al., 2021). Likewise, rising humidity and temperatures have reduced labor capacity in the agricultural sector, with declines of up to 10% in the hottest months and projections reaching 20% by 2050 (Dunne et al., 2013). Taken together, these dynamics have generated significant economic losses. The reduction in labor capacity— measured as the total potential loss of income related to heat—is estimated to have accounted for 1.34% of regional GDP in 2022, with impacts concentrated in sectors like agriculture (Hartinger et al., 2024). Rising temperatures not only affect workers' labor productivity but also their health, leading to potential income losses that could impact their future socioeconomic conditions.

These effects not only reduce rural production and income, but also impact food security and drive-up food prices, disproportionately affecting the poorest households. When weather conditions make productive activities unviable—for example, during prolonged droughts or extreme heat—migration toward cities and their outskirts increases, especially toward intermediate urban centers (with populations ranging from 20,000 to one million). In this way, risk becomes endogenous throughout the rural-urban cycle, reinforcing patterns of inequality that disproportionately affect vulnerable groups, such as women, children, older adults, and informal workers (UNDP, 2025).

These dynamics demonstrate that unequal exposure to risk depends not only on where people live, but also on the livelihoods on which they depend, reinforcing divergent trajectories of vulnerability and human development.

Unequal Vulnerability

While exposure defines who is at risk due to their location or livelihood, vulnerability determines how much is lost when that risk materializes. In this sense, people living in poverty are not only more exposed, but they are also less protected and, in relative terms, have more to lose in the face of the same adverse event.

One of the main sources of economic vulnerability is the fragile and less diversified asset profile of poor households. Unlike higher-income sectors, whose wealth typically consists of financial savings and geographically diversified assets, low-income households concentrate their wealth in tangible, local assets with low liquidity. In this regard, vulnerability depends not only on available assets but also on access to formal and informal risk management mechanisms.

For low-income households in urban settings, assets and investments tend to take the form of poorly

constructed housing located in areas more exposed to external threats (Hallegatte & Walsh, 2021). Recent research in Mexico and Chile confirms that populations living in chronic poverty rely on informal, self-built housing that lacks minimum safety standards and access to services (Ecker et al., 2025). Thus, in the face of the same event, the impacts are not uniform: those with fewer resources and lower prior capabilities face more severe and long-lasting relative losses.

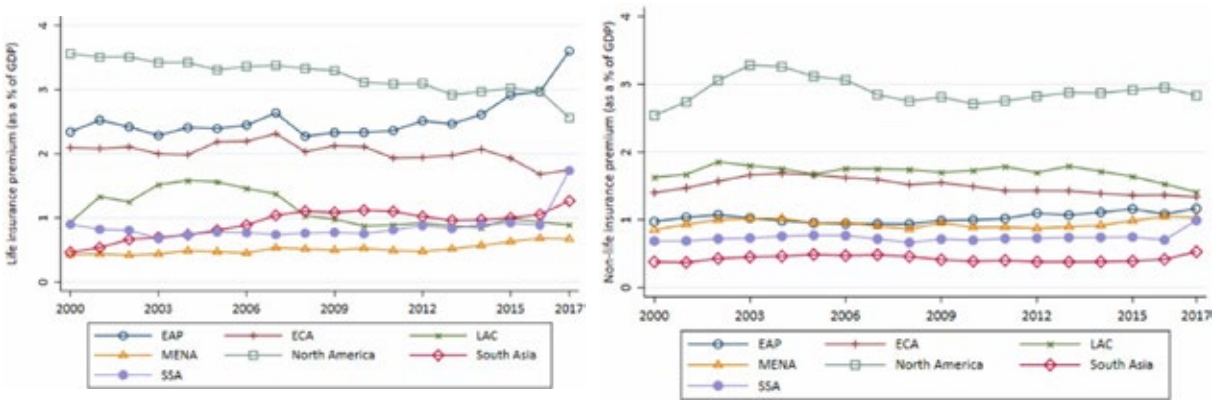
This inequality in asset holdings translates into a reduced ability to absorb shocks. For example, the financial impact on poor families is two to three times more severe than that experienced by higher-income groups (Bangalore, 2017). Similarly, households without savings suffer a decline three times greater than that of households with financial surpluses (ADB, 2024). In terms of the risk of welfare losses, the lowest-income quintile in LAC bears 37% of total expected losses, nearly double the average (Middelanis et al., 2025). These dynamics demonstrate that vulnerability amplifies the immediate effects of disasters and, in turn, shapes subsequent recovery trajectories.

In the wake of a disaster, limited resilience forces the poorest households to make critical decisions that jeopardize their present and future well-being, such as taking on debt to rebuild or cutting back on essential consumption (UNDRR, 2024). In many cases, these decisions trigger what is known as a poverty trap: when a household's assets fall below a minimum subsistence level, its autonomous capacity for recovery is undermined, leaving it trapped in a situation of structural deprivation (Ecker et al., 2025). Thus, disasters not only cause immediate losses but can also have irreversible effects on well-being.

These limitations on absorption capacity are closely linked to how households manage risk. On the one hand, insurance penetration in LAC is extremely low: on average, the total value of insurance premiums in 2022 amounted to just 3% of the region's GDP. Moreover, low-income populations are less insured and financially protected against disasters (Morales, 2025). These populations are also more reliant on access to financial instruments such as social transfers or formal and informal post-disaster support to recover (Hallegatte & Walsh, 2021).

As a result, households resort to informal self-financing strategies—such as drawing on savings, selling assets, taking on debt, or relying on family networks—which, while effective in the face of idiosyncratic shocks, prove insufficient in the event of disasters or economic crises. These strategies largely reflect the incomplete risk transfer architecture in the region, whether through market instruments or social protection mechanisms.

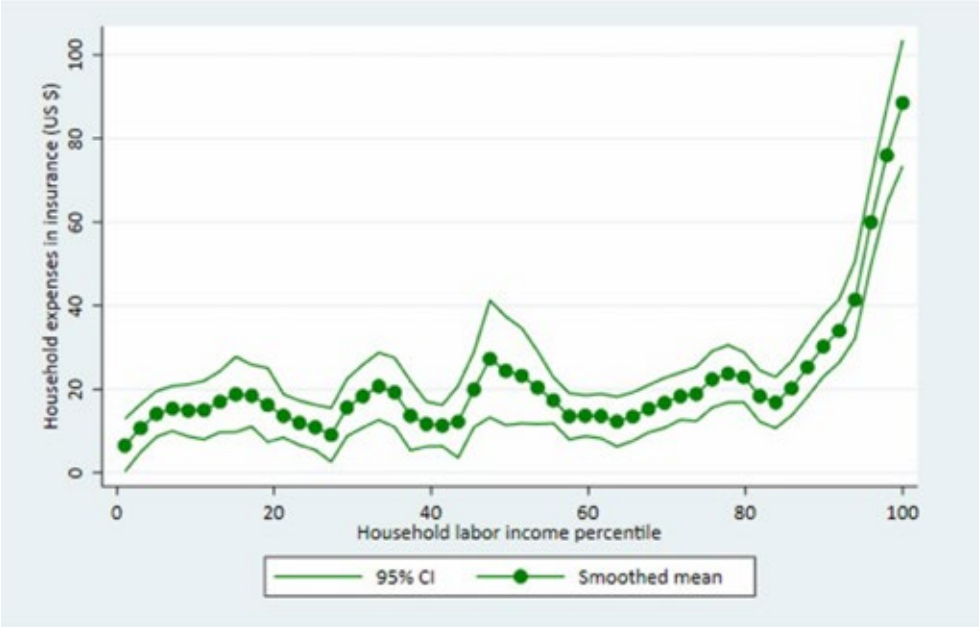
Figure 12. Insurance penetration remains low in the region



Source: Morales, 2025.

Empirical evidence shows that access to insurance in the region is strongly determined by socioeconomic status. Morales (2025) shows that, in Chile and Mexico, a one-percentage-point increase in income raises the probability of having insurance by about 4 percentage points (referring to savings-linked life insurance in Chile and any voluntary private insurance in Mexico). Additionally, in Mexico, having a tertiary education raises this probability by nearly 7 percentage points. In the Dominican Republic (Figure 13), the analysis indicates that insurance spending is highly unequal: it remains below $20 for 90% of households, but exceeds $80 in the top decile. Taken together, the data shows that formal insurance mechanisms are concentrated in higher-income households, widening vulnerability gaps.

Figure 13. Total insurance spending by income level in the Dominican Republic in 2018



Source: Morales, 2025.

This incomplete insurance architecture means that the poorest households not only face greater risks but also lack the necessary tools to manage them effectively. As a result, the burden of adjustment falls disproportionately on their assets, consumption, and living conditions, further deepening pre-existing inequalities.

In rural areas of LAC, this vulnerability takes on an additional dimension linked to the fragility of rural livelihoods. The heavy reliance on rain-fed agriculture—which accounts for 90% of fertile land—makes crop farmers directly dependent on rainfall patterns and highly vulnerable to changes in temperature and precipitation (Contreras Cabral, 2022). These conditions disproportionately affect small-scale farmers, who are predominantly indigenous, have low levels of education, and face high rates of poverty (ECLAC, 2010).

Furthermore, the link between disasters and food insecurity acts as a key amplifier of vulnerability. In developing countries, poor households spend between 40% and 60% of their income on food, compared with about 25% for higher-income households (Bangalore, 2017). This dependence leaves the poorest households more vulnerable to the price volatility that often follows an emergency, hitting particularly

hard in rural areas where supplies are limited (Hallegatte & Walsh, 2021). Recent evidence shows post-disaster food insecurity disproportionately affects poor rural households, women, and minorities (UNDP, 2025).

Despite progress in its reduction, poverty in the region persists at scale. It is estimated that 31% of the population in LAC is at risk of poverty, while 25% remains below the poverty line (UNDP, 2025). Taken together, this means that more than half of the population lacks the financial stability, protective mechanisms, or financial instruments necessary to absorb even a moderate shock without experiencing a significant and lasting decline in their well-being.

These dynamics are reinforced by the multidimensional nature of poverty and its structural determinants. In LAC, women are overrepresented in households living in poverty and face simultaneous deprivations in key areas such as economic autonomy, access to assets, participation in decision-making, and excessive unpaid care work burdens. These constraints limit their ability to generate income, access protection mechanisms, and recover from shocks, thereby widening existing gaps in high-risk contexts.

Taken together, these factors create a structurally unequal vulnerability, in which large segments of the population face persistent limitations in anticipating, withstanding, and recovering from the impacts of disasters. This inequality not only amplifies the effects of shocks but also shapes human development trajectories by reducing the effective capacity to absorb, adapt to, and recover from risk. These gaps in the effective capacity to cope with risk point directly to an additional dimension: the resilience gap.

Resilience Gap

The resilience gap reflects **differences in the capacity to recover and adapt in the aftermath of a disaster.** Beyond the magnitude of the initial impact, this dimension refers to the speed, quality, and sustainability with which households, communities, and states are able to restore their living conditions. In this sense, two households with similar levels of exposure and vulnerability may experience profoundly different recovery trajectories. These differences are reflected not only **in the ability to recover** but also **in recovery times**, which can vary significantly between households and regions, determining whether the effects of a disaster are temporary or persistent.

As previously discussed, Resilient Human Development seeks to prevent or mitigate the impact of widespread critical disruptions on people's lives, so that they can enjoy the life they value in terms of capabilities and agency; it also places special emphasis on ensuring that, **when struck by adversity, the most disadvantaged people and communities can recover and thrive.**

The dimensions examined above—exposure and vulnerability—show that people living in poverty have less capacity to prevent losses resulting from a disaster from becoming permanent setbacks in well-being, because of where they live, the productive activities they engage in, and the resources and assets they have at their disposal to cope with risk. In this context, recovery cannot be understood solely as the result of an individual's ability to overcome adversity, but rather as a social and structural process.

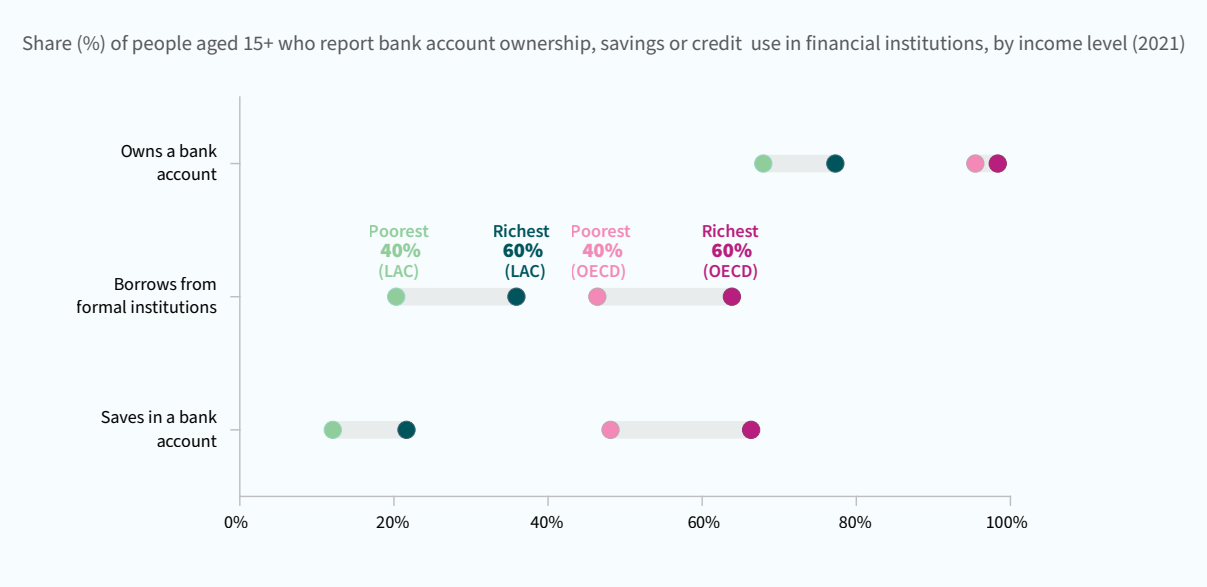
The *2014 Human Development Report* focused on the relationship between human development and resilience. It argued that, while vulnerability can be reduced by lowering the incidence of shocks and threats, a society's resilience remains limited unless other measures are applied. Active policies to

strengthen the community, remove barriers to recovery, and promote norms that enable assistance to those in need after a disaster are needed to build resilience (UNDP, 2014: 17). In a society, individual vulnerability is interdependent with that of others, and social institutions are important for reducing it.

At the aggregate level, resilience gaps are closely linked to the capacity of socioeconomic systems to sustain inclusive recovery processes. In LAC, high levels of informal employment—affecting 55.1% of workers—limit access to institutional recovery mechanisms, undermining income continuity and protection against shocks (ECLAC, 2015). Compounding this is the limited coverage of social protection systems: globally, only 19% of the poorest quintile has some form of protection, which restricts the ability to prevent sharp declines in well-being following adverse events (Morales, 2025).

Gaps in financial inclusion reinforce these dynamics by limiting households' ability to finance their recovery in the short and medium term. As shown in Figure 14, access to credit and formal financial services varies significantly by income level. In Mexico, for example, while 47% of the highest-income population has access to bank credit, only 15% of the population living in chronic poverty does (Ecker et al., 2025), significantly restricting the ability to defer reconstruction costs.

Figure 14. Financial Inclusion Gaps



Note: Bank account ownership refers to the share of people reporting owning a bank account (individually or jointly) or using a mobile money service. Credit use indicates the share of individuals who report borrowing money from a bank or financial institution, using a credit card, or using a mobile money account. Savings reflect the share of people who report saving or setting aside money at a bank or other financial institution. Regional averages are weighted and displayed as reported by the World Bank.

Source: UNDP, 2025.

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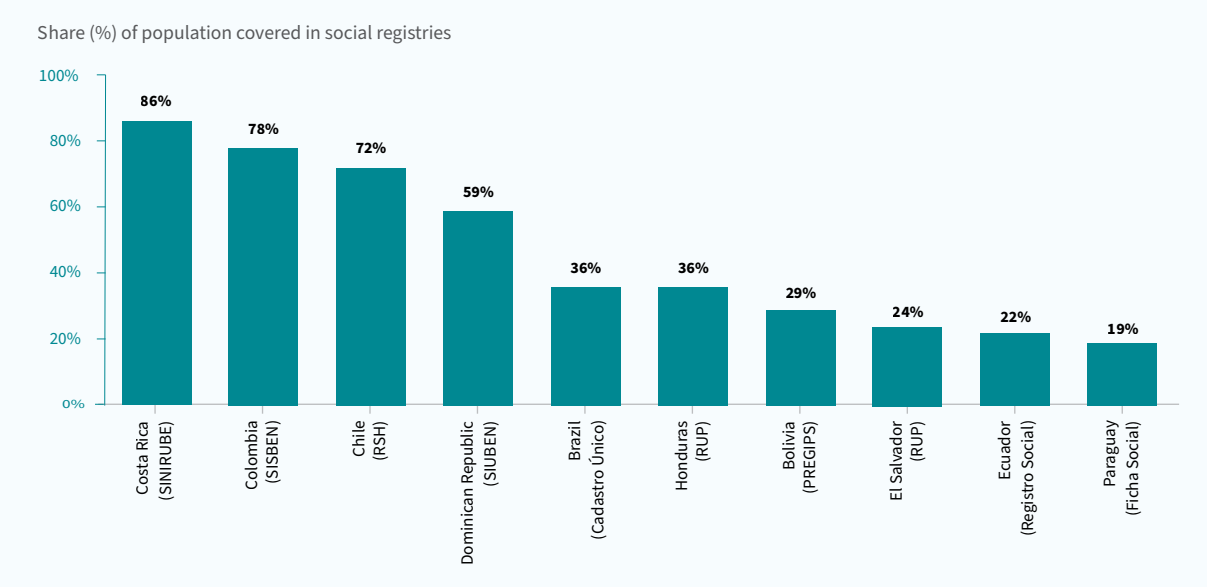
The resilience gap extends beyond households and is reflected in the unequal capacity of governments to respond and rebuild. Factors such as fiscal space, institutional strength, and access to financing determine the ability to implement timely and sustained responses. Likewise, the state's operational capacity — including inter-institutional coordination, response speed, and field-level implementation capacity —plays a decisive role in determining the quality of recovery processes. In this context, the quality of information systems is critical. While Berner and Van Hemelryck (2020) noted that six countries in the region achieved social registry coverage exceeding 70%, more recent UNDP (2025) estimates suggest this remains a structural challenge: only Costa Rica, Colombia, and Chile maintain levels above that threshold, while in six other LAC countries (Brazil, Honduras, Bolivia, El Salvador, Ecuador, and Paraguay) coverage reaches less than 50% of the population.

Figure 15. Share (%) of the population covered in social registries across LAC countries

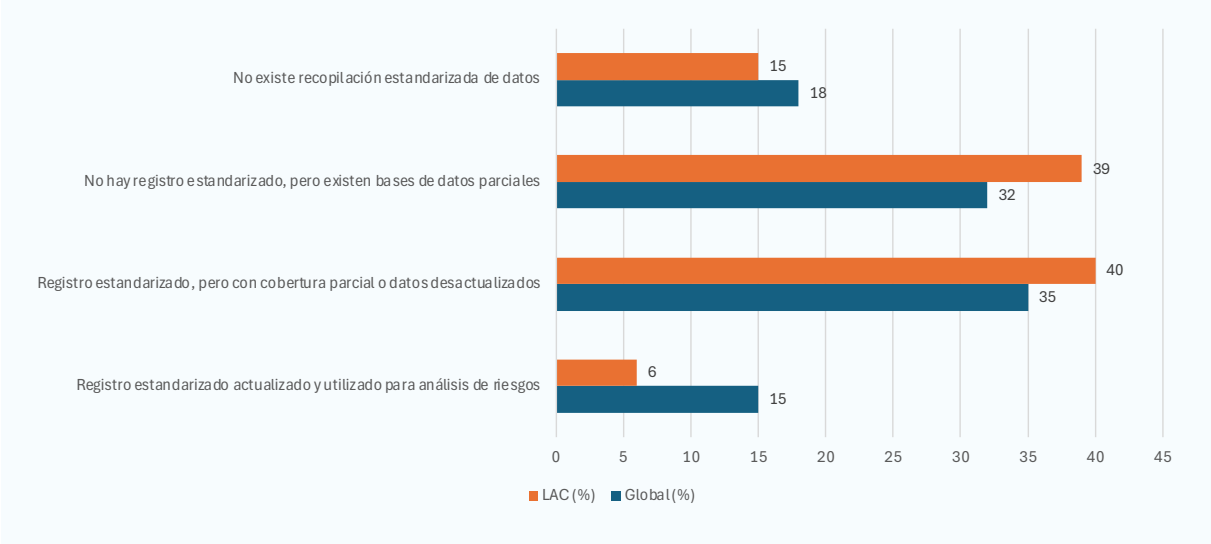


Note: Social registry coverage is calculated as the total number of individuals in social registries (latest data publicly available from country sources) divided by the total population (using 2020 data from the United Nations World Population Prospects).

Source: UNDP, 2025.

Similarly, the lack of adequate infrastructure asset registers limits the ability to anticipate damage and prioritize reconstruction. According to a recent CDRI survey for infrastructure experts, only 6% of the respondents in LAC reported up-to-date, standardized registers that are systematically used for risk analysis (CDRI, 2025). These weaknesses create gaps in government action and give rise to geographical areas where recovery is slower, incomplete, or even unfeasible. These situations are particularly evident in territories with less government presence or greater structural constraints, where recovery processes tend to be more protracted and uneven.

Figure 16. Infrastructure asset registers in LAC and globally (in %)



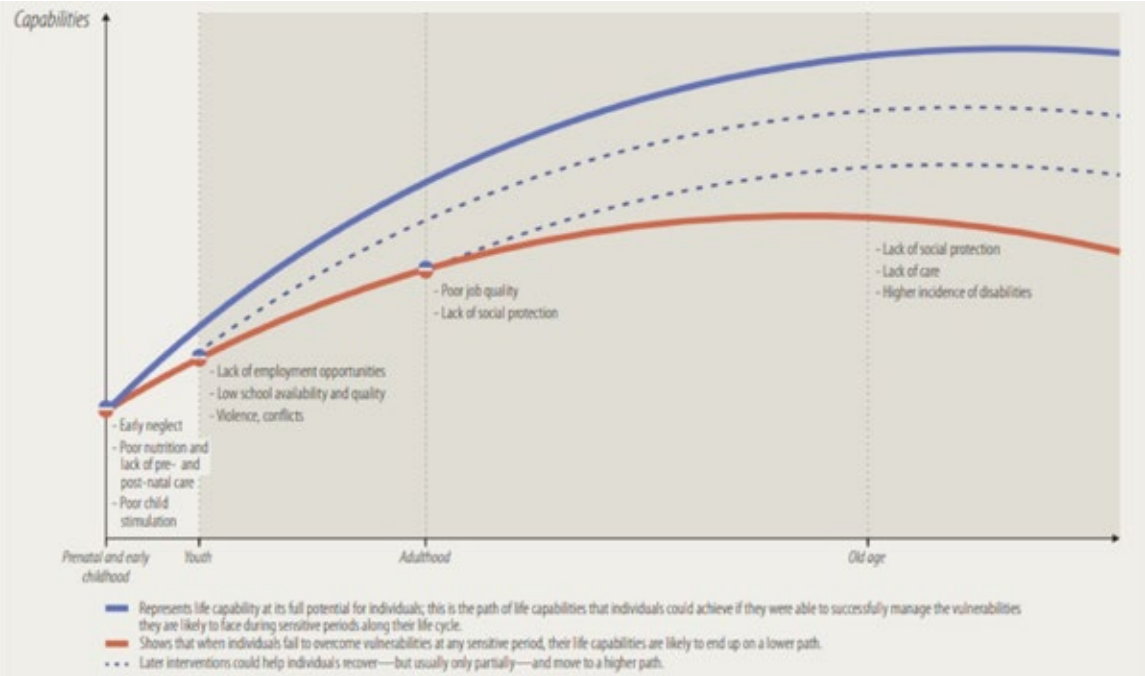
Note: An infrastructure asset register is a comprehensive, systematically maintained database that catalogues all critical infrastructure assets within a jurisdiction or organization. It typically includes detailed information such as asset type, location, design specifications, construction materials, age, condition, maintenance history, ownership, and operational status. The data was pulled from The Global Infrastructure Resilience Survey for Infrastructure Experts and Professionals of the CDRI.
Source: CDRI, 2025.

These dynamics create a resilience gap in which the capacity for recovery varies not only among households but also among regions and countries. Likewise, the quality of recovery is a determining factor: in many cases, households rebuild under similar or even more precarious conditions, perpetuating their vulnerability. This gap determines whether the impacts of disasters result in temporary disruptions or structural setbacks in human development.

From a life-cycle perspective, these differences take on an additional dimension. Capacities are built and transformed over time, and are highly dependent on prior trajectories and the social environment (UNDP, 2014). In this regard, the timing of a shock and the speed of subsequent recovery are critical to its long-term effects. Shocks during critical stages—such as early childhood or adolescence—can lead to persistent losses in capabilities if recovery is slow or incomplete, while in later stages they can reinforce accumulated vulnerabilities (Bangalore, 2017).

As Figure 17 illustrates, capacities may follow a trajectory close to their potential or deviate toward lower levels in contexts of vulnerability. The gap between these trajectories reflects not only the initial impact of the shock but also the capacity—and the time—for recovery. Thus, seemingly temporary disruptions can become permanent when conditions for timely recovery are lacking, causing lasting deviations in human development trajectories.

Figure 17. Investments in life capabilities in relation to future prospects



Source: UNDP, 2014.

Thus, while vulnerability defines the extent of the loss based on the intensity of a hazard or event, resilience determines whether that loss is temporary or permanent, thereby reinforcing—or reversing—existing inequalities. In this sense, resilience not only reflects inequalities but also acts as a mechanism through which these inequalities are reproduced or transformed over time.

Box 2. Two Ways of Coping with Disaster Based on Socioeconomic Status

While higher-income households adapt and mitigate risk in traditional ways—by diversifying their income, securing insurance coverage, drawing on savings to offset consumption, and seeking alternative reserve strategies—poorer households cope with the impact on their income and assets through reactive subsistence strategies (Ecker et al., 2025).

First, these households immediately cut back on their spending. For example, in Guatemala, following Hurricane Agatha in 2010, per capita spending fell sharply by 5.5%, leading to a 14% increase in poverty (Bangalore, 2017). Globally, consumption among households lacking liquid savings falls three times faster than among those with financial surpluses, as they lack the resources to buffer their consumption (ADB, 2024).

Furthermore, the reduction in resources also affects health. Disasters can trigger health crises that strain household finances by combining loss of income with the high cost of medical services (Ecker et al., 2025).

On the other hand, women in poverty tend to leave the labor market to focus on reconstruction and caregiving (UNDP, 2025). Additionally, children are more likely to be taken out of school to boost short-term income. For example, following Hurricane Mitch in Nicaragua in 1998, child labor participation increased by 58%, and the percentage of children who had to study and work simultaneously rose from 7.5% to 15.6% (CDRI, 2025). Similarly, in Guatemala, following Hurricane Stan in 2005, the likelihood of child labor rose by 7% in the affected areas (Bangalore, 2017).

Moreover, in the face of an emergency, low-income households tend to sell what few productive assets they have left in exchange for immediate income, and migrate to urban areas, increasing pressure on those spaces (Capelli et al., 2021). Finally, vulnerability to risk also affects investment decisions. Less budget is allocated to strengthening and improving housing for fear that a new disaster or eviction will nullify the investment. In agriculture, the poorest and most vulnerable to risk choose crops with high climate tolerance but low added value (Capelli et al., 2021). This is a defensive decision that ensures minimal subsistence but hinders economic growth.

These decisions perpetuate precariousness across generations, severely undermine human capital, and trap families in a cycle of poverty, vulnerability to risk, and growing inequality.

4. Policy Recommendations

The findings presented in this document show that disaster risk in LAC is not a random or natural phenomenon, but rather the result of unequal development processes that determine who is exposed, who is most vulnerable, and who can recover best. In this context, disasters not only interrupt development trajectories but also operate as mechanisms that reproduce and deepen inequalities, creating downward spirals of unsustainable development.

Breaking the cycle between inequality and disasters requires an agenda that goes beyond reactive emergency management and integrates disaster risk reduction as a central element of development. Within this framework, the 2025 *Human Development Report* proposed, as part of its recommendations, the three "I"—instruments, institutions, and infrastructure—as a framework for advancing resilient human development. Building on this framework and on the findings of this document, this report proposes several lines of action. In accordance with the RAR24, these lines of action are categorized as prospective (mitigating future disaster risk), corrective (reducing existing disaster risk), and compensatory (addressing residual risk).

Instruments

One of the central findings of the analysis is that the way risk is measured shapes how investment decisions are made. Conventional metrics, focused on asset losses, underestimate the actual impacts on well-being, which often disproportionately affect those with lower economic capacity. Instruments that can help better risk measurement and improved decision-making include:

- **Adopt the No Net Disaster Risk Increase Rule** when approving new projects or interventions in public and private infrastructure to prevent the increase of risk within their areas of influence.
- **Implement gender-sensitive and inclusive budget classifiers or budget tagging for resilience** to identify, monitor, and target public spending toward disaster risk reduction, resilience, and climate change adaptation.
- **Implement distributive fiscal policies through land value capture,** channeling resources from land valuation to protect the most vulnerable communities.
- **Integrate resilience criteria into loans and other financial products for micro, small, and medium-sized enterprises (MSMEs).** These enterprises account for a significant share of employment and supply chains serving vulnerable populations, and their resilience helps keep critical services operational.

Institutions

The distribution of disaster risk is deeply influenced by institutional decisions and omissions, socioeconomic power structures, and governance dynamics. Moving toward more resilient societies requires strengthening institutional capacities to integrate risk management with other public policy agendas. Some elements that can contribute from an institutional perspective include:

- **Integrate risk to well-being metrics into Public Investment Systems (SNIP),** incorporating socioeconomic well-being losses to complement conventional asset-loss metrics and correct for their inherent biases.
- **Strengthen the integration of dimensions of social development, spatial planning, and risk management** to overcome fragmented approaches and help marginalized communities recover from adversity, under the idea of recovering and prospering with a "*Build Back Better*" approach.
- **Systematically incorporate gender and intersectionality perspectives into risk governance,** ensuring the effective participation of women—including indigenous, rural, and Afro-descendant women— in planning, decision-making, and recovery processes.
- **Develop adaptive and parametric social protection systems** capable of forecasting shocks and promoting anticipatory action, with priority given to the most vulnerable populations.

Infrastructure

Infrastructure plays a central role in shaping risk and development opportunities. The design, location, and quality of infrastructure determines the exposure, vulnerability, and resilience of communities. In this regard, the following actions are proposed:

- **Improve informal settlements in situ.** Implement vulnerability reduction programs in informal settlements located in areas of reducible risk through participatory, resilience-focused upgrading initiatives.
- **Implement collective housing insurance schemes at the municipal level** that reduce disparities in purchasing power and enable faster recovery.
- **Develop public land banks to enhance the resilience of social housing,** prioritizing its strategic location.
- **Expand the options available in digital payment systems,** incorporating alternatives that include the unbanked population (for example, through electronic withdrawals using identification documents).
- **Manage contingent liabilities that are sensitive to inequality.** Integrate disaster risk into the fiscal strategy, considering the complementarity between corrective investments that address the unequal distribution of risk and the expansion of financial protection mechanisms.

Breaking the Cycle of Inequality and Disaster

Overcoming the inequality-disaster-inequality cycle requires recognizing that risk is endogenous to development processes and that its reduction must be integrated into structural public policy decisions. In this sense, risk management can no longer be treated as an isolated field, but rather as a central component of land use planning, social policy, and public investment.

Moving toward resilient human development involves not only reducing exposure to hazards, but also, transforming the conditions that create vulnerability and ensuring that recovery is sensitive to the unequal distribution of disaster risk. Only then will it be possible to break the cycles of unsustainable development and build more inclusive and resilient pathways for the region.

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