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A STRATEGIC APPROACH TO CLIMATE MOBILITY ADAPTATION AND RESILIENCE IN LATIN AMERICA AND THE CARIBBEAN

Authors: Robert Muggah¹

Summary

Latin America and the Caribbean is increasingly suffering climate change shocks such as wildfires, storms and floods, and climate stresses such as sea level rise and prolonged drought. Extreme weather events, shocks and stresses are drivers of human mobility and displacement. UNDP is committed to building resilience in the region; that is why three policy documents have been developed to strategically address adaptation to and preparedness for climate mobility in the region.

The first of these policy documents is based on a revision of Nationally Determined Contributions (NDCs) and National Action Plans (NAPs) because of their potential to improve adaptation, resilience and measures to address climate-induced loss and damage. The second policy document is an experience that analyzes climate mobility lessons for Latin America and the Caribbean from the experience of Colombia. The third document is titled "Mapping Climate Mobility Hotspot Risks", which proposes a preliminary conceptual framework to assess risks and prepare responses to climate mobility.

These group of documents identified opportunities for Latin America and the Caribbean to: strength public awareness and engagement with climate mobility; work on entry points to improve diagnostics of potential hotspots and strengthen strategies for promoting adaptation and resilience; enhance practical solutions to human mobility within the NDCs and NAPs and related climate

policy instruments, and to learn from good practices at the national and subnational level from the Colombian experience.

Key findings

- » LAC countries and communities face a future of increasing climate mobility including displacement, migration and planned relocation, due to increasingly frequent and intense climate shocks and stresses. While the relationships between climate change and mobility are often non-linear and difficult to predict, new innovations are emerging to help better anticipate when, where, and how many people are at risk. "Mapping Climate Mobility Hotspot Risks" proposes a preliminary conceptual framework to assess risks and responses to climate mobility in Latin America and the Caribbean.
- » Several Latin American and Caribbean governments are proactively integrating different types of human mobility into their NDCs and NAPs. Latin America and the Caribbean featured comparatively more NDCs and NAPs than other parts of the globe, also, several are proactively integrating different types of human mobility into them, which reflects their higher level of engagement with themes of climate-related displacement, migration, and relocation. Those advances and gaps are considered in "Reviewing climate-related human mobility in Latin American and Caribbean's Nationally Determined Contributions (NDCs) and National Action Plans (NAPs)".



¹ Dr. Robert Muggah is co-founder of the Igarape Institute and principal of SecDev Group.

- » Colombian authorities are reviewing their conceptualization and approach to climate mobility and recognizing that there are gaps in definition and capabilities. The policy document “Climate mobility, adaptation and resilience: lessons from Colombia for Latin America and the Caribbean” provides a detailed overview of the process experienced by this country, presents the perspectives of the process and records experiences that may be significant for learning in other regions.

Policy Recommendations

- » **Strengthening data collection, management, and analysis capabilities of national and subnational public authorities is essential for monitoring multiple categories of climate mobility.** Developing centralized, unified, longitudinal, and geo-referenced databases, along with effective information visualization, is crucial for shaping informed adaptation and resilience strategies.
- » **Reinforcing policy coordination and coherence is vital for preparing and responding to climate mobility in both out- and in-migration areas.** UNDP can aid governments in identifying core priorities, refining strategies, and integrating climate mobility priorities into national development planning.
- » **Promoting adaptation strategies for at-risk people and vulnerable areas is crucial to reducing the drivers of climate mobility.** People often migrate due to inadequate support systems, social networks, and economic opportunities, aside from climate shocks. Access to climate information helps communities and governments better understand and adjust to climate risks.
- » **Advocating for resilience in at-risk populations involves formalizing settlements, building social housing, and regularizing land tenure in migration areas.** Climate mobility is often tied to socio-economic drivers and vulnerabilities. Building individual, household, and neighborhood resilience can provide alternatives to displacement and migration.
- » **Supporting climate mobility governance and facilitating knowledge sharing is essential.** UNDP can help define climate mobility, including rights and responsibilities, and assist in designing policies based on best practices.

1. Introduction

The world is facing a triple planetary crisis of climate change, biodiversity loss, and pollution. Climate change has become pervasive, accelerating, and intensifying in all regions, with different manifestations. Latin America and the Caribbean is already suffering climate change shocks such as wildfires, floods and storms, and climate stresses such as sea level rise and prolonged drought.

Latin American and Caribbean countries and communities face a future of increasing climate mobility including displacement, migration and planned relocation. Increasingly frequent and intense climate shocks such as floods, landslides, and forest fires connected to El Niño/Niña are already displacing hundreds of thousands of people every year. Climate stresses such as rising temperatures, prolonged droughts, and sea level rise are degrading land, undermining food security, disrupting livelihoods, and compelling vulnerable households and communities to migrate. The Intergovernmental Panel on Climate Change (IPCC) has recognized that an increase in climate-related migration and displacement over the past decade². It estimates that in Latin American and the Caribbean over 2 million weather-related displacements over the past decade, many due to floods, storms, and drought.³

While the relationships between climate change and mobility are often non-linear and difficult to predict, new innovations are emerging to help better anticipate when, where, and how many people are at risk. For example, the World Bank has issued several influential reports generating forecasts of climate mobility through its Groundswell Series that predicts internal migration arising from disasters and slow-onset hazards with alternating ranges based on distinct scenarios.⁴

Further, there are increasing opportunities to enhance national and subnational capacities to enhance adaptation responses for people on the move as a result of climate change across Latin America and the Caribbean as well as to populations that will be affected by these increased migratory patterns. To do so requires creating a framework and awareness for national and subnational authorities to first recognize current and future trajectories of climate mobility but also develop comprehensive strategies to prepare communities before, during, and after people move. Vertical cooperation – from the national to the

² IPCC (2014) highlighted the particular impacts of extreme weather events, the governance challenges of displaced people, and the challenges of migration for urban sustainability. Studies have typically examined observed migration patterns by using climate and related impacts as independent variables, sample of surveys of migrant motivations and historical analogs. See www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap12_FINAL.pdf. The IPCC also undermined the issue of climate migration in 2022, including emphasizing the medium in extreme weather and climate events resulting in displacement in Central and South America. See also IOM (2023) climate change and human mobility: quantitative evidence on global historical trends and future projections, www.migrationdataportal.org/sites/g/files/tmzbd1251/files/2023-06/Final5_2023%20Climate%20Change%20and%20Human%20Mobility.pdf.

³ See WMO (2022).

⁴ See IOM (2022).

municipal level – and horizontal coherence - across ministries and departments – is a priority.

UNDP is committed to building resilience in the region; that is why three policy documents have been developed to strategically address adaptation to and preparedness for climate mobility in the region. The following note highlights the ways in which governments across the region are framing climate mobility, including in national planning and policy. It also considers the latest developments in predicting climate mobility, including underlying assumptions and limitations of existing models. And finally analyzes the experience of Colombia, which can be valuable for other national and subnational authorities in charge of articulating climate mobility strategies.

2. Framing climate mobility and drawing from Colombia's experience

Several Latin American and Caribbean governments are proactively integrating different types of human mobility into their National Determined Contributions (NDCs) and National Adaptation Strategies (NAPs). An expectation is that doing so can help prioritize investments in adaptation, resilience, and measures to address climate-induced loss and damage. Indeed, all 33 countries have completed NDCs and just 12 have produced NAPs or equivalent strategies. This is why one of the policy documents is oriented to *Reviewing climate-related human mobility in Latin American and Caribbean's Nationally NDCs and NAPs*.

Latin America and the Caribbean featured comparatively more NDCs and NAPs than other parts of the globe as well as a higher level of engagement with themes of climate-related displacement, migration, and relocation. Gaps persist, however, including in relation to definitions of climate mobility, the articulation of relationships between climate mobility and loss and damage, together with practical examples of adaptation and resilience promotion for displaced, migrant and resettled populations.

There are significant opportunities for Latin America and Caribbean governments to include human mobility priorities in NDCs, NAPs as well as national legislation and policy. To date, a third of all countries across the region have yet to include mobility-related issues in any of their NDCs.⁵ By way of comparison, human mobility was mentioned in virtually all countries that produced NAPs, together with concrete strategies to address the

issue. Common priorities included improvements in data collection and forecasting, support for adequate housing, employment, and skills-development in areas of expulsion and reception, supporting populations that are “trapped” and unable to move, as well as investment in planned relocation. There is a marked shift in treating mobility as a “negative” outcome of climate change and rather as an opportunity to enhance adaptation and resilience to minimize the human costs. Opportunities for regional cooperation on climate displacement and mobility have also been identified, particularly in the case of the Caribbean that has in place Free Movement Agreements⁶.

Several Latin American and Caribbean countries are developing progressive adaptation and resilience strategies. For example, Colombia may soon adopt a “climate mobility” law that proposes the development of a unified registry and assigns clear responsibilities for specific ministries and agencies.⁷ In 2023, Colombia also invited over 20 countries from across the region to discuss the wider implications of climate mobility. Meanwhile, Chile and Peru are considering similar laws on climate mobility, bolstering adaptation and resilience programs that are already underway. In 2021, Antigua and Barbuda called for regional agreements and frameworks to address climate mobility. In 2022, Argentina started providing three-year humanitarian visas to climate displaced people from Central America, the Caribbean and Mexico. And countries ranging from Barbados and Cuba to Brazil, Colombia and Chile are relocating at-risk populations, including from at-risk areas near coastlines or in drought-prone regions. There are exceptional opportunities for knowledge sharing and technical assistance between countries and cities across the region.

Colombia has established an institutional architecture for disaster risk management, climate change adaptation, migration and forced displacement. While there is no one institution addressing climate mobility in a comprehensive manner, many lessons can be learned from Colombia's cross-government coordination and vertical cooperation at the national and local level. The policy document provides a detailed overview of how Colombia is advancing a regulatory framework to address climate mobility and records experiences that may be significant for learning in other regions.

3. Anticipating climate mobility

Notwithstanding growing attention to climate mobility, there is still comparatively limited awareness about its scope, scale and dimensions in Latin America and

⁵ Of the more than 20 countries that did reference human mobility, they noted the existence of climate-related displacement, migration and relocation. See Muggah, R. (2023a) *Reviewing climate mobility in Latin America and the Caribbean NDCs and NAPs*, Technical Paper, UNDP.

⁶ <https://disasterdisplacement.org/resource/fma-caribbean>

⁷ A draft law was proposed in 2022 and is being debated in 2023 and 2024. See Muggah, R. (2023) *Climate mobility adaptation and resilience - lessons from Colombia for Latin America*, UNDP.

the Caribbean. The World Bank estimates that by 2050 there could be between 9 and 17 million “internal climate migrants” in Mexico and Central America alone depending on different climate change scenarios.⁸ While there is recognition that many countries and cities across the region are exposed to a range of climate shocks and stresses such as increased rainfall, rising temperatures and sea level rise⁹, and that these factors can exacerbate existing social and economic inequalities¹⁰, there is comparatively limited evidence of which areas and populations are more exposed than others.¹¹ The Intergovernmental Panel on Climate Change (IPCC) has provided a general review of climate mobility over the past decade, noting that it has increased between the 2014 and 2022 assessments.¹²

One way to better prepare for climate mobility is by anticipating where displacement, migration, and relocation are likely to occur and which populations are most at-risk. The policy document “*Mapping Climate Mobility Hotspot Risks*” proposes a preliminary conceptual framework to assess risks and responses to climate mobility in Latin America and the Caribbean.

There is growing interest in mapping and modeling future patterns of human mobility.¹³ For the past few decades, approaches to estimating climate mobility have relied on econometric methods that rely on historical data. These approaches have come under criticisms for insufficiently accounting for non-linearity and relying on flawed data. More recently, advanced machine learning drawing on enhanced computing power is helping forecast climate mobility and rank the relative importance of specific drivers.¹⁴ To be sure, the drivers of climate mobility are highly complex, compounding and often counterintuitive. The quality and coverage of underlying data is often

uneven.¹⁵ Some analysts believe that existing climate mobility modeling is still not ready to inform policy-making. Notwithstanding concerns about methods, data, and the predictive capacity of existing models¹⁶, mapping at-risk areas and vulnerable populations can enhance situational awareness.

There are several factors to consider when assessing potential hot spots for climate mobility. The IPCC underlines how extreme weather events (shocks) such as cyclones, hurricanes, and storms provide the most direct pathway owing to loss of residence and economic disruption, though many people tend to return home as soon as possible. Low lying coastal areas and populations living in areas prone to floods and landslides are particularly vulnerable.¹⁷ Meanwhile, long-term environmental changes (stresses) such as drought and sea-level significantly affect mobility patterns, including rural to urban migration. Non-climatic factors, including socio-economic drivers, also shape the willingness and ability of people to move. For example, adverse changes in agriculture, the extent of food security, availability and quality of employment, and real estate values can all contribute to decisions to stay or to relocate. It is important to stress that these factors appear to have stronger effects on internal as opposed to cross-border migration and that often the poorest and wealthiest may be less likely to move. Finally, structural vulnerabilities such as laws that regulate population movement and underlying income and education can all shape population movement.

In this paper, it’s highlighted how UNDP can support partners to anticipate and respond to climate mobility, particularly high-risk areas and populations. This can include technical assistance to develop data-driven

⁸ The World Bank report on Latin America does not consider the Caribbean and South America. See World Bank (2019) Internal climate migration in Latin America, Groundswell, Policy Note 3. documents1.worldbank.org/curated/en/983921522304806221/pdf/124724-BRI-PUBLIC-NEWSERIES-Groundswell-note-PN3.pdf. See also Clement, V., Rigaud, K., de Sherbinin, A., Jones, B. Adamo, S., Schewe, J., Sadiq, N., and E. Shabahat (2021) Groundswell I and II, Acting on Internal Climate Migration, openknowledge.worldbank.org/entities/publication/2c9150df-52c3-58ed-9075-d78ea56c3267

⁹ See IOM (2021) Impactos de los desastres, la degradación ambiental, y el cambio climático en América del Sur, environmentalmigration.iom.int/sites/g/files/tmzbd11411/files/documents/mapeo-sobre-migracion-medio-ambiente-y-cambio-climatico-en-america-del-sur_csm.pdf

¹⁰ See Castellanos, E. et al (2022) Central and South America, Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama eds. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 1689–1816.

¹¹ The IOM has conducted a literature review in Latin America and the Caribbean and is exploring a range of scenario-based assessments.

¹² IPCC (2014) highlighted the particular impacts of extreme weather events, the governance challenges of displaced people, and the challenges of migration for urban sustainability. Studies have typically examined observed migration patterns by using climate and related impacts as independent variables, sample of surveys of migrant motivations and historical analogs. See https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap12_FINAL.pdf. The IPCC also undermined the issue of climate migration in 2022, including emphasizing the medium in extreme weather and climate events resulting in displacement in Central and South America. See also IOM (2023) climate change and human mobility: quantitative evidence on global historical trends and future projections, www.migrationdataportal.org/sites/g/files/tmzbd1251/files/2023-06/Final5_2023%20Climate%20Change%20and%20Human%20Mobility.pdf.

¹³ See Hoffmann R, Dimitrova A, Muttarak R, et al. 2020 A meta-analysis of country-level studies on environmental change and migration. *Nature Climate Change*. 10(10): pp.904–912 and Kaczan DJ and Orgill-Meyer J. 2020 The impact of climate change on migration: a synthesis of recent empirical insights. *Climatic Change*. 158(3): pp.281–300.

¹⁴ Newer climate mobility models are leveraging machine learning and spatial analytics. These move beyond econometric models that assume a linear function of environmental, economic, social, demographic, political and other factors. They build on qualitative studies that underline how mobility decisions and outcomes are frequently a result of complex interactions operating at multiple scales. More complex non-linear machine learning approaches such as random forests and neural networks are offering promising new avenues that may overcome limitations of econometric models. See Muggah (2023b) Mapping climate mobility hotspot risks in Latin America and the Caribbean, Technical Note, UNDP.

¹⁵ A rapid review of the peer-review published literature on climate migration in Latin America and Caribbean also indicates that there are relatively few comparative quantitative assessments of and an abundance of case studies using qualitative methods. See Muggah (2023b).

¹⁶ See Beyer, R. and Milan, A. (2023) Climate change and human mobility: quantitative evidence on global historical trends and future projections, IOM, gmdac.iom.int/sites/g/files/tmzbd1416/files/documents/2023-06/final_2023-climate-change-and-human-mobility.pdf.

¹⁷ Place attachment often dominates decisions about whether to relocate. Likewise, social differentiation in access to resources on the bases of ethnicity, wealth and gender are also key factors influencing migration decisions and outcomes.

tools to help systematize data, enhance situational awareness, and shape priorities for adaptation and resilience promotion. A basic framework can help partners identify and map dominant climate shocks and stresses, socioeconomic drivers and underlying structural vulnerabilities. The aggregation and organization of the supporting data ecosystem can facilitate diagnostics and monitoring and evaluation, particularly of subnational authorities. Of course, any assessment must acknowledge underlying assumptions and limitations, particularly given the uncertainties associated with climate impacts.

4. An agenda for action

Preparing for climate mobility requires anticipating both short- and longer-term shocks and stresses. There is currently an understandable focus on climate-induced displacement due to extreme weather events. While most national governments routinely acknowledge the risks associated with rising temperatures and sea-levels, there is limited anticipatory action at the subnational level owing to competing priorities. There are likewise concerns about the risks of declaring populated areas as “at risk”, not least given the political economy of land ownership and tensions over tenure. Nevertheless, UNDP and its partners are well positioned to support public authorities and civil society groups to bolster climate mobility governance. Likewise, UNDP can help partners develop a climate mobility dimension to their programs and projects, maximizing co-benefits and economies of scale.

There are several ways UNDP and similar development partners can support climate mobility mapping and governance.

Strengthen data collection, management and analysis capabilities of national and subnational public authorities to monitor multiple categories of climate mobility. Designated ministries and departments in Latin American and Caribbean countries can benefit from technical assistance to design, manage, and analyze data on different categories of human mobility. The design and development of centralized, unified, longitudinal, and geo-referenced databases and the visualization of information is critical to shape informed adaptation and resilience strategies. UNDP can support the design and development of diagnostics and provide technical assistance to reinforce the capacity of existing national platforms.

Reinforce policy coordination and coherence to prepare and respond to climate mobility in both out- and in-migration areas. All countries across Latin America and the Caribbean recognize that comprehensive and holistic responses are required. Yet there continues to be

challenges to achieve vertical and horizontal alignment between different levels of government and the many agencies and stakeholders involved. At a minimum, public authorities need to clarify priorities, define institutional responsibilities, and define financing arrangements. UNDP can help governments better identify and define core priorities, refine strategies, and integrate climate mobility priorities into national development planning.

Promote adaptation strategies targeting at-risk people and vulnerable areas to reduce the drivers of climate mobility. People are often displaced or decide to migrate not just because of the incidence or severity of climate shocks and stresses, but also the absence of adequate support systems, social networks and economic opportunities. Targeted investment in preventing and reducing vulnerabilities in flood-prone and coastal communities, improving underlying infrastructure, expanding access to drought resistant crops and livestock, retraining in new skills development, and strengthening basic services can help amplify adaptation and resilience. Access to climate information can also provide communities and governments with increased awareness to better understand and adjust to climate risk through adaptation strategies and informed decision making.

Advocate for resilience for people at risk of climate mobility by formalizing at-risk settlements, building social housing and regularizing land tenure in out- and in-migration areas. The scope and scale of climate mobility is often fundamentally connected to underlying socio-economic drivers and underlying vulnerabilities, including access to coping mechanisms and social safety nets. Indeed, people typically move as a last resort, the last option when all others fail. Building resilience at the individual, household and neighborhood scale can amplify and diversify alternatives to displacement and migration. Improved land tenure, formalization and enforcement of property rights, and strengthened housing stock and quality are all promising avenues.

Support climate mobility governance and facilitate knowledge sharing. Approaches to climate mobility are often reactive and unpredictable. Responses tend to be framed as “emergencies” and treated as a “crisis”. Agencies like UNDP can help country partners and policy makers to better define climate mobility, including rights and responsibilities. Moreover, development organizations can help public authorities design and development policies informed by global, regional, and domestic best practice. An important contribution can and should include working with stakeholders to better quantify climate mobility, both in the short- and longer-term. Finally, UNDP can help partners evolve and learn, including from local experience, and to adapt strategic approaches accordingly.



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