A Neglected Issue: Informal Settlements, Urban Development, and

Disaster Risk Reduction in Latin America and the Caribbean

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Abstract

This work introduces the state of informal settlements in Latin America and the Caribbean based on a comprehensive review of recent reports on urban development from national governments. We explore potential relationships between informal settlements and national policies on urban development and disaster risk reduction, especially on how risk governance and disaster resilience are conceived and practiced. We analyzed 17 Habitat III National Reports issued during the preparatory process towards the New Urban Agenda in 2016 from: Argentina, Barbados, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Guatemala, Honduras, Jamaica, Mexico, Paraguay, Peru, and Uruguay. Using statistics and qualitative methods, we looked at variables such as access to drinking water and sewerage in the region, along with references to the Sendai Framework and urban policies. Results show that the situation of informal settlements in the region is complex and presents two different realities that coexist: one group of countries in which provision of basic urban services poses great challenges for a significant proportion of urban population, while the other group in which urban informality and precariousness persists despite better statistics. Risk governance and disaster resilience principles are scarcely articulated in existing urban development discourses in the region.

Introduction

According to the latest figures from the UN-Habitat (2017a) and the 2016 World Cities Report (WRC) (UN-Habitat, 2016), nearly 54 percent of global population lives in cities that produce around 80 percent of the global gross domestic product (GDP). Although urbanization is seen as a 'transformative force' that has helped millions escape poverty through increased productivity, employment opportunities, improved quality of life, and large-scale investment in infrastructure and services, urban areas around the world still face enormous challenges and changes. Persistent urban issues detected are: uncontrolled and unplanned urban growth, changes in family patterns, growing number of urban residents living in slums and informal settlements, in addition to the challenge of providing urban services for all (UN-Habitat, 2016). The widespread growth of slums or informal urban settlements has become a central policy issue in the last two decades, especially in developing countries. In a major study of this phenomenon, *The Challenge of Slums* (UN-Habitat, 2003), UN-Habitat estimated that in 2001, 924 million people or 31.6 percent of the total urban population in the world lived in informal settlements. More recent estimates provided by UN-Habitat show that the proportion of the urban population living in slums in the developing world decreased from 46.2 percent in 1990 to 39.4 percent in 2000, 32.6 percent in 2010, and 29.7 percent in 2014 (UN-Habitat, 2015d, see Statistical Annex). However, estimates also show that the number of slum dwellers in the developing world is on the increase given that over 880 million residents lived in slums in 2014, compared to 791 million in 2000, and 689 million in 1990. This implies that there is still a long way to go in reducing the large gap between slum dwellers and the rest of the urban population living in adequate shelter with access to basic services, indicating that informal settlements are a persistent issue that requires close attention (UN-Habitat, 2016).

Additionally, there has been a significant increase of extensive disasters and their impacts on cities in the last twenty years, either in reference to losses related to damaged homes, affected people or damage to health and education equipment (Davis, 2006). This trend includes an increase in mortality, morbidity, and the economic losses associated with the above-mentioned extensive risks, detected more frequently in the so-called Global South (Allen et al., 2017). Gender, age, race, income, and location have significant implications for the vulnerability of people and communities within cities. Low-income groups are being pushed into locations that are prone to disasters, and four out of every ten non-permanent houses in the developing world are now located in areas threatened by floods,

landslides, and other natural hazards (UN-Habitat, 2009) revealing the multidimensional fragility of informal settlements.

In this regard, this work aims to offer a fresh overview of the current problems of urban informality in the Latin American and Caribbean region (LAC) while exploring potential relationships between informal settlements and national policies on urban development and disaster risk reduction, particularly on how risk governance and disaster resilience are conceived and practiced.

Methodology

Recent reports from multilateral agencies, international organizations, and in particular, national reports from selected LAC countries generated during the Habitat III process (2003–2015) provide a close look at the current situation of informal settlements at the regional level. The Habitat III National Reports were the first step towards an evidence-based outcome on the monitoring of urban development and identifying emerging issues for the elaboration of the New Urban Agenda.

In the initial step, we gathered quantitative data at the global level and the LAC regional level from the World Bank, International Labor Organization (ILO), UN-Habitat and LAC countries. The quantitative data was analyzed through the SPSS 24 statistical package.

Next, we reviewed the national reports beginning with a qualitative analysis of the *Issue Paper No.22: 'Informal Settlements'* (UN-Habitat 2015c), which had served as a guide to national governments during the elaboration of their reports. The qualitative analysis allowed us to obtain a more precise perspective on the current state and trends of informal settlements in the region, as well as identify which crosscutting topics should be considered for further analysis.

Based on our review of the Issue Paper N°22, we selected two specific challenges for the implementation of the New Urban Agenda (NUA) in relation to informal settlements for this research: 1) risk governance, and 2) disaster resilience. We then conducted a quantitative analysis to observe general trends and estimate the main differences in the region. Data were selected as: urban population at the national level, urban population living in slums, urban population with access to potable water and sewerage, and number of initiatives and/or public policies for informal settlements. The qualitative data related to 'risk governance' and 'disaster resilience' were obtained through

content analysis (Bowen, 2009) based in the Habitat III National Reports, using Atlas.it 7. In particular, we looked at the references made to the Sendai Framework for Disaster Risk Reduction 2015–2030 (Sendai Framework) and reference to the articulation of different actors in the governance of cities and risks. The latter was done through a full screening of each report in combination with a search by keywords, i.e. 'governance,' 'local level,' 'national level,' 'actors,' and 'agreement.' The analysis, based on the work of Renn (2008), helped identify 'horizontal' and 'vertical' arrangements between actors and institutions at multiple levels, from national to local. The same full screening was made for the three dimensions of disaster resilience, as addressed in the existing literature (Adger, 2000; Cutter et al., 2008; Satterthwaite, 2013): a) ability to absorb, b) bounce-back, and c) bounce-forward. Some keywords that helped us to identify relevant sections were 'resilience,' 'resistance,' and 'learn,'

Framing informality within the New Urban Agenda

In the process of urban transformation in the last decades, informality is considered a 'generalized mode' of urbanization (Roy, 2005). Roy defines urban informality as a "state of exception" of the formal order of urbanization (Roy, 2005, p.147). As urbanization is conceived as the process by which people move from a rural to an urban way of life, 'urban informality' implies urbanization practices that fall outside the scope of the state and policies that moderate the process of urbanization. In this process of informality, it is possible to distinguish two dimensions, one linked to housing (unitary) and the other to settlements (group). According to Roy (2009), informal housing can include any type of housing that is 'illegal' by falling outside of government control or regulation, or that is not protected by the state. On the other hand, informal settlements are residential areas where inhabitants have no land rights or tenure, with modalities ranging from illegal occupation to the informal lease of houses and rooms (UN-Habitat, 2015c). Such settlements, where housing often does not comply with safety regulations, generally lack urban infrastructure and basic services   and are often found in hazardous areas prone to socio-environmental disasters: close to polluting industrial activities, hillsides without appropriate management or mitigation, flood-prone river banks, among others.

Slums and informal settlements are known by different names in the LAC region. *Villas miseria* in Argentina, *barrios populares* in Bolivia, *favelas* in Brazil, *campamentos* in Chile, *barrios precarios* or *tugurios* in Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, Honduras, Mexico and Paraguay, *champas* in Guatemala, *asentamientos humanos* or *tugurios* in Peru, and *cantegriles* in Uruguay, or *slums* or *shanty towns* as in Barbados and Jamaica. Despite the different names, informal settlements the world over share features of urbanization in its

most acute or extreme form. This form is characterized by widespread poverty, large agglomeration of houses in poor conditions, often located in disaster prone areas; residents tend to have limited access to public space and green areas and are constantly exposed to eviction, disease and violence (UN-Habitat, 2015c). Nevertheless, urban informality is not only the domain of the poor and marginalized, it is also a form of real estate speculation that can affect people of high and middle income. Roy & AlSayyad (2004) have pointed out that informal urbanization and land markets are closely linked and are also important for middle class and even the elites. According to these authors (Roy & AlSayyad, 2004), informal settlements exist in a continuous and complex relationship between legality and illegality, in which settlements formed through illegal land invasion and self-built housing can co-exist together with the informal subdivision of land of high value in the market but legally acquired or transferred. These and other elements related to the complex system of cities that include governance, land markets, and the series of public and private actors that participate, reveal the intricacy of the phenomenon, while also showing that the definition of the 'informal' as simply the opposite to 'formal' requires more reflection and research (Castro et al., 2015).

Since 2003, UN Member States have agreed to measure informal settlements at the household level by defining dwellers as a group of individuals living under the same roof, lacking one or more of the following five conditions—also called deprivations: 1) access to improved water; 2) access to improved sanitation facilities; 3) sufficient living area—not overcrowded; 4) structural quality/durability of dwellings; and 5) security of tenure (UN-Habitat, 2003; 2015c). One of the most significant studies conducted in this regard, *The Challenge of Slums* (UN-Habitat, 2003), estimated that in 2001 there were around 924 million people living in informal settlements or slums around the world, representing 31.6 percent of the global urban population. The vast majority of these settlements are located in the Global South, representing 46.2 percent of the urban population in 1990 (UN-Habitat, 2015d). Although this figure has reduced to 29.4 percent in 2010 (UN-Habitat, 2015d), the problem persists as the absolute number of people living in slums has increased from 689 million in 1990 to 880 million in 2014 (UN-Habitat, 2015d). In the LAC region, the urban population living in informal settlements has decreased from 33.7 percent in 1990 to 21.1 percent in 2014, however, the number of people living in such conditions remains almost unchanged: from 106 million in 1990 to 104.8 million in 2014 (UN-Habitat, 2016) (see Table 1). According to Bähr & Mertins (1983), informal settlements in LAC arose mainly between the 1950s and 1970s, and were characterized by being located in the urban periphery as a result of the important rural-urban migration that occurred in that period. Currently, this type of

migration has significantly reduced, leading to a migration more associated with inter and intra-urban movements (Tacoli, McGranahan, & Satterthwaite, 2015).

Table 1. Distribution of urban population living in slums (percentage of total urban population) and urban slum population at mid-year (thousands) per major region

Major region	Proportion of urban population living in slum (%)						Urban slum population at mid-year by region (Thousands)*					
	1990	1995	2000	2005	2010	2014	1990	1995	2000	2005	2010	2014
Developing Regions	46.2	42.9	39.4	35.6	32.6	29.7	689,044	748,758	791,679	830,022	871,939	881,080
Northern Africa	34.4	28.3	20.3	13.4	13.3	11.9	22,045	20,993	16,892	12,534	14,058	11,418
Sub-Saharan Africa	70.0	67.6	65.0	63.0	61.7	55.9	93,203	110,559	128,435	152,223	183,199	200,677
Latin America and the Caribbean	33.7	31.5	29.2	25.5	23.5	21.1	106,054	112,470	116,941	112,149	112,742	104,847
Eastern Asia	43.7	40.6	37.4	33.0	28.2	26.2	204,539	224,312	238,366	249,884	249,591	251,593
Southern Asia	57.2	51.6	45.8	40.0	35.0	31.3	180,960	189,931	193,893	195,828	195,749	190,876
South-eastern Asia	49.5	44.8	39.6	34.2	31.0	28.4	69,567	75,559	79,727	80,254	84,063	83,528
Western Asia	22.5	21.6	20.6	25.8	24.6	24.9	12,294	14,508	16,957	26,636	31,974	37,550
Oceania*	24.1	24.1	24.1	24.1	24.1	24.1	382	427	468	515	563	591

Source: UN-Habitat (2016) Statistical Annex and UNDESA (2014) World Urbanization Prospects.

* Trends data are not available for Oceania. A constant figure does not mean there is no change.

The preparatory process towards the New Urban Agenda (NUA) promoted by the United Nations concluded with the Third UN Conference on Housing and Sustainable Urban Development, named Habitat III, which took place in Quito, Ecuador, in October 2016. Although the process formally began in September 2014, the UN Member States have been jointly working since 1976 on a series of guidelines to face the long-term global urban challenge on issues such as access to housing, infrastructure and services, climate change, as well as on informal settlements. Signed

by more than 150 countries in 2016, the New Urban Agenda will act as a guide for the next 20 years in urban development efforts for a wide range of actors, from national states to political and social movements at the urban level, regional donors and investors, and international organizations (UN-Habitat, 2017b). In this process, different governments agreed to generate a set of indicators that would allow them to measure the advances being sought at multiple scales, and identify the main challenges they faced in urban development issues. For that purpose, 22 thematic documents, called issue papers, were generated. These served to better understand and address each priority area. Each issue paper was elaborated by a group of experts and introduces the current state of each priority area (e.g., informal settlements), revealing the most significant indicators and data, and also identifying the areas where more research is needed. The documents refer to issues as diverse as urban culture and heritage, governance, public space, infrastructure and urban services, transportation and mobility, housing, smart cities, and informal settlements. These thematic documents also served as a guide for Member States and governments to prepare their national reports during the preparatory process towards Habitat III.

National reports are documents based on existing evidence in each country, and generated by their respective governments with the objective of monitoring urban development at the national level with respect to the goals and objectives set out in the last conference, Habitat II, held in Istanbul in 1996. In the case of Habitat III, the reports have served specially to identify problems that may affect urban development in the coming decades and which must necessarily be addressed in the New Urban Agenda. The latter is the case of informal settlements. In this sense, the present work seeks to analyze the situation of settlements in LAC through the national reports delivered by the selected countries and reflect on possible relationships between informal settlements, the governance of urban risks, and disaster resilience.

Issue Paper No. 22: Informal Settlements

Issue Paper No. 22 (UN-Habitat, 2015c) on informal settlements is structured around three aspects. First, it reviews the history and offers an actual overview of informal settlements regionally and worldwide. Key data and figures that account for the progress of the urban agenda are disaggregated and emphasize the need to reduce informality. Second, it identifies the main challenges to improving the unsafe conditions generated by informality, that is, what are the obstacles and problems that people, organizations and governments face every day. And third, it identifies the courses of action that can help reduce such unsafe conditions and informality in general in the cities. Using these three aspects, Figure 1 summarizes the state of informal settlements at global scale according to the

revised issue paper: drivers or causes that underlie the challenges and issues, and action pathways that can help improve the settlements' conditions.

The elements of Figure 1 (i.e., drivers, challenges, and action pathways) were also analyzed considering their possible relationship with disaster risk reduction, specifically looking for references to risk governance and disaster resilience. At first glance (see Figure 1), 'risk governance' emerges as the dimension with more relationships to the elements of Issue Paper No. 22. This may indicate that 'governance' seems to be very present among the drivers and challenges of informal settlements, as well as for the opportunities to improve their conditions. For example, according to the thematic document, governance can influence some causes of informal settlements: rapid population growth, lack of opportunities to access housing, among others. Likewise, governance can influence the housing market (public and private) as well as political frameworks at the local or national level, therefore influencing potential action pathways to improve settlements' conditions: long-term financial options, a multi-scalar approach to the problem, and central government leadership.

Issue Paper No. 6 for Habitat III defines urban governance as:

"It is the software that enables the urban hardware to function, the enabling environment requiring the adequate legal frameworks, efficient political, managerial and administrative processes, as well as strong and capable local institutions able to respond to the citizen's needs."

(UN-Habitat, 2015a, p.1)

Figure 1. Overview of the state of informal settlements at the global level
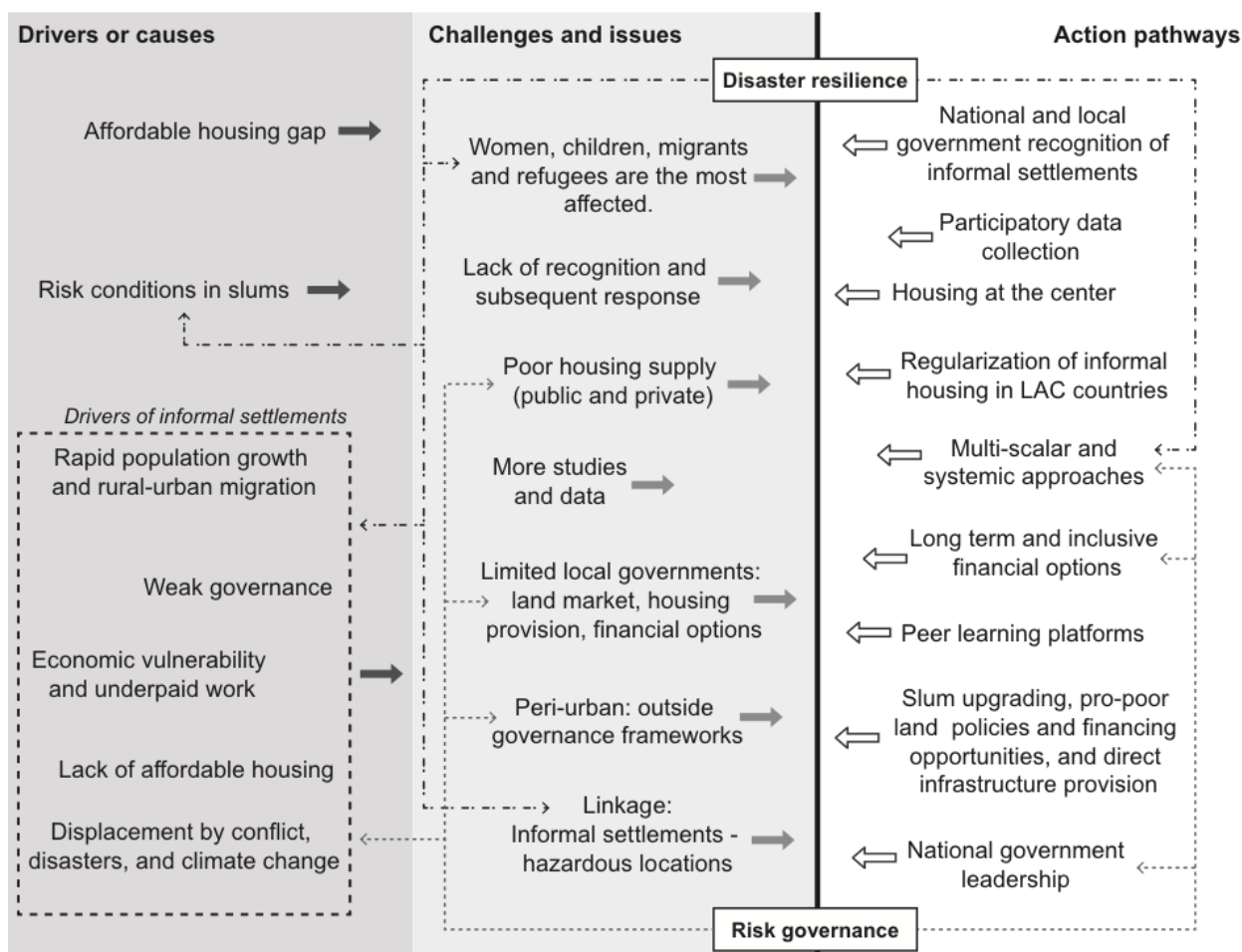
Source: Authors, 2019, based on UN-Habitat (2015c) and Sandoval & Sarmiento (2018)

The above definition encompasses how governance is understood in the urban context as well as within the process that led toward Habitat III. Implicitly, the definition also refers to the political, economic and social actors and institutions that influence, define and apply public policies and decision-making, as well as their vertical and horizontal position within a governance system (Renn, 2008). The horizontal position includes relevant actors in decision-making processes within a defined geographical or functional segment (such as all relevant actors within a community, region, nation, or continent) while the vertical level describes the relationship between these segments. Because the focus of the study is on the urban context, the analysis made on risk governance in each country profile focused on how local governments have been included or how they interacted with other actors—with emphasis on the horizontal level.

The Issue Paper No. 22 makes constant references to decision-making and implementation processes at the local and national levels, reflecting the importance of governance over the past, present and future of informal

settlements. For example, 'weak governance systems' have been considered as an engine of the historical proliferation of informal settlements (Avis, 2016), especially in developing countries. Thus, limitations in capabilities of local governments, budgetary and legally, are a preponderant element restraining possible solutions to urban informality. Conversely, the leadership of national governments is also seen as an important component of development processes at the local level (UN Millennium Project, 2005), especially when national leadership allows a governance environment that helps develop and implement public policies at local level.

Albeit less accentuated in Issue Paper No.22, the dimension of disaster resilience also appears among the characteristics and processes that could help improve unsafe conditions in informal settlements. For example, the analyzed issue paper recognizes the development of informal neighborhoods in locations exposed to natural and human-made hazards as a problematic tendency, and it emphasizes that the promotion of urban resilience must address this trend at its roots (UN-Habitat, 2015c). As shown in Figure 1, the concept of resilience addressed in the issue paper makes references to vulnerability (i.e., vulnerable groups such as children, the elderly, etc.) and how promoting recovery capacities, along with multi-scalar and multi-sectorial efforts can help these neighborhoods to have a more resilient future.

Like the dimension of governance, Issue Paper No.15 helps delineate the concept of resilience in the context of Habitat III:

> "Resilience focuses on how individuals, communities and businesses face not only multiple crises and disasters, but also how opportunities for a positive transformation of development are adapted and exploited."

> (UN-Habitat, 2015b, p.1)

From a general point of view, and not considering that the role of institutions and governments is not mentioned, this definition distinguishes three main ideas: the ability of individuals, communities and organizations to 'withstand' impacts or tensions; the ability to 'recover' from such impacts; and the ability to 'learn' and reduce the damage of future impacts. For us, this definition incorporates key advances that have emerged in the academic literature on resilience recently (Adger, 2000; Cutter et al., 2008; Satterthwaite, 2013). For purposes of this work, we compact such definitions of resilience into three dimensions related to disasters and their impacts: a) ability to

absorb, b) bouncing-back, and c) bouncing-forward. The following section presents the main results of the review of the national reports.

Analyzing the Habitat III National Reports

The current state of urbanization and informality in the region is presented below based on a comparative analysis of quantitative variables such as access to drinking water and sewage, and qualitative variables related to risk governance and disaster resilience. Table 2 provides the data regarding the total urban population of each country, total number of people living in informal settlements, and percentages with respect to the rest of the urban population. It considers the proportion of urban population that lacks access to residential potable water and sewerage system. As mentioned, the last two factors correspond to 2 of the "5 Deprivations" adopted by UN-Habitat to define a home as part of urban informality (UN-Habitat, 2003, 2015c). Likewise, Table 2 highlights important differences that exist between the countries of the region with respect to the proportion of urban population living in informal settlements.

Table 2. Selected indicators from Habitat III National Reports, from selected LAC countries

	Urban		Informal settlements		Deprivations	
Country	Population (million)	% of national population	Population (million)	% of urban population	Lacked piped water	Lacked sewerage connection
Argentina	36.49	91.0%	6.39	16.7%	19.0%	45.0%
Barbados*	0.18	66.0%	-	-	3.26%	94.0%
Bolivia	6.79	67.5%	3.21	44.9%	16.7%	59.8%
Brazil	160.93	83.5%	38.49	22.3%	3.0%	8.44%
Chile	16.17	87.0%	0.83	0.52%**	0.1%	3.5%
Colombia	34.70	76.0%	4.88	13.1%	6.0%	15.0%
Costa Rica	3.84	76.8%	0.003	0.1%**	0.57%	3.72%
Cuba*	8.57	76.8%	-	-	7.7%	6.0%

Dominican Republic	8.48	78.9%	1.20	12.1%	53.7%	30.3%
Ecuador	9.09	62.7%	1.98	21.8%	11.0%	13.0%
Guatemala	8.41	51.5%	2.79	34.5%	9.4%	17.7%
Honduras	4.43	53.9%	1.23	34.9%	2.6%	10.5%
Jamaica	1.45	54.0%	0.92	60.5%	6.8%***	0.7%***
Mexico	81.20	72.3%	10.85	14.4%	4.0%	9.2%
Paraguay	4.08	60.5%	0.72	17.6%	12.1%	7.4%
Peru	23.89	77.0%	8.23	34.2%	8.4%	12.3%
Uruguay	3.08	93.4%	0.16	5.0%	6.0%	43.0%
Total / Mean	411.78	72.28%	81.90	20.8%	10.02%	22.33%

Source: Based on the Habitat III National Reports of selected countries.

* Habitat III National Reports of Barbados and Cuba do not present specific data, these countries assure that there are no 'informal settlements' in their territories.

** Data provided by Chile and Costa Rica in their Habitat III National report contrast with data from UN-Habitat (2016): Chile with a 9 percent of urban population living in informal settlements, while Costa Rica with a 5.5 percent.

*** Data for Jamaica is delivered by UN-Habitat (2016).

Table 2 shows that, in general, countries with a higher percentage of urban population living in informal neighborhoods tend to have a lower level of urbanization, in other words, they have a significant percentage of rural population as in the cases of Jamaica, Bolivia, Honduras and Guatemala. This observation suggests that the rapid development of informal settlements in some cities may be the result, in part, of high rates of rural-urban migration, as well as a lack of capacity of governments and cities to absorb the demand for housing, especially related to rural migrants with low incomes. With few possibilities of generating income or means of subsistence, these migrants finally tend to settle in established informal neighborhoods or create new settlements through illegal occupation of land. Newcomers are not only economically and socially marginalized but also ignored in general by the city's public policies, which tend to be designed and executed for the 'formal' and established population (Herrle, Ley, &

Fokdal, 2015). This is especially worrisome for disaster risk reduction, because these populations are often among the most vulnerable and exposed to different natural and anthropogenic threats, and most affected by disasters (UN-Habitat, 2003).

Another condition that accentuates the vulnerability of these settlements is the lack of access to residential drinking water and sewerage. National reports show that the lack of access to sewerage in the region (22.33 %) doubles that of drinking water (10.02%) (see Table 2). A closer look reveals that even high-income countries like Argentina and Uruguay (World Bank, 2017) struggle with the challenge of providing sewerage connection, as 45% and 43% of their populations lack the basic facility, respectively. Access to sewerage and sanitation systems is essential for the success of most public health programs, being particularly essential in informal neighborhoods where urban density and overcrowding are often high. Barbados, with 94 percent of its population without access to sewerage service, constitutes an exception because of the alternative disposal systems of disposable excreta: the country has one of the highest rates of potable water service coverage in the region and with a low population living in informal settlements.

As shown in Table 2, the distribution of informal neighborhoods in the region shows dissimilar realities. In one group are Jamaica and Bolivia with a population living in precarious and often insecure conditions that borders on 50 percent of national urban population. While other countries such as Costa Rica, Chile, and Uruguay have a proportion that barely reaches 1 percent. On average, 21 percent of the urban population in the selected countries lives in precarious conditions. As noted earlier, this figure is low compared to the rest of the developing regions, whose average is around 43 percent (Fernandes, 2011). However, in absolute numbers, about 105 million people in the region live in precarious conditions, a figure that has stagnated and persisted since 1990 when 106 million people were estimated as slum dwellers (UN-Habitat, 2016).

Table 2 also shows that almost three-quarters of total population living in informal neighborhoods are concentrated in Brazil, Mexico, and Perú, that is 57.7 million people or 70.45 percent of the total. Both Jamaica and Bolivia together, with high percentages of national population living in slums, do not represent 5 percent of the total of the region. This raises questions and challenges for the development of public policies at the national and regional level, which in turn depends on the capacities of each country, their interest and commitment to improve the conditions of these residents. On the other hand, this can shed light on the effective orientation that certain

international actors and initiatives such as UN-Habitat, donors (USAID, European Union) or the New Urban Agenda itself can exercise in making these issues visible and influence decisions to address them.

Along these lines, this study expanded the review of Habitat III National Reports to other aspects, such as to the references made on the Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework), as well as public policies (i.e., policies, programs, and initiatives) developed to address the problem of informal settlements. This exercise made it possible to identify those countries that have established relationships between urban development under the guidance of the New Urban Agenda and disaster risk reduction under the guidance of the Sendai Framework. Table 3 shows the countries that included reference to the Sendai Framework and its objectives in their national reports, and the countries that did not.

Table 3. References made to the Sendai Framework in selected Habitat III National Reports

Mentions to the Sendai Framework and its objectives	Habitat III National Reports
YES	Argentina, Brazil, Costa Rica, Cuba, Dominican Republic, Ecuador, Paraguay
NOT	Barbados, Bolivia, Chile, Colombia, Guatemala, Honduras, Jamaica, Mexico, Peru, Uruguay

Source: Authors, 2019, based on the Habitat III National Reports of selected countries.

Table 3 does not necessarily reflect which countries are adopting measures in practice to comply with the Sendai Framework's guidelines, nor whether there is an effective coordination, or linkages between urban development policies and DRR policies in each country. However, the obtained data allowed us to examine the guidelines these countries will attempt to follow in the coming decades in relation to urban development and DRR. From this perspective, we analyzed the reports that mention the Sendai Framework in relation to informal settlements and DRR: Argentina, Brazil, Costa Rica, Cuba, Dominican Republic, Ecuador, and Paraguay. We found that none of them articulated their urban development guidelines with the improvement of living conditions and the reduction of disaster risk in informal settlements in a direct and clear way. The countries' discourses—through their Habitat III National Reports—do not recognize the intrinsic relationships among the 'formal' urban development, 'informal' urban development, and processes of urban disaster risks. In general, the sections

dedicated to the informal and precarious neighborhoods in the national reports focused mainly on the provision and access to services and infrastructure, and on policies or social assistance concerning improving the quality of life of the population in subjects of health, education and transport. Even though health, education and transport, as well as access to services are very important dimensions for the reduction of disaster vulnerability, the national reports did not manage to explicitly link these references with the objectives of the Sendai Framework. This absence of recognition of the global agreement on disaster risk reduction by national urban experts, particularly on national and urban level objectives (Priority 2, Objective 27, letters d) and k) in UNISDR, 2015), can also be the indication of government compartmentalization that tends to keep departments and offices in silos.

To comprehensively analyze the relationship between informal settlement issues and disaster risk reduction, we also looked at the reported progress on the implementation of the Sendai Framework. The aim was to observe how informality issues are being addressed within 'formal' planning and management processes in each country. To this end, we reviewed the progress made by different countries on the Sendai Framework's Target E: Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020. We did this through the Analytics Module available at the Sendai Framework Monitor (UNISDR, 2019) for the period 2015–2018. We found that only two of the 17 selected countries reported some progress on this target. They did so on the indicators E-1 and E-2 (UNISDR, 2019), and only for the year 2017. Unfortunately, there is no mention of DRR issues related to informal settlements in any of these progress reports. This reaffirms our previous observation on the national government 'compartmentalization.' It also demonstrates, in practice, the difficulty in finding common areas, overlaps or even differences between each agenda—the Sendai Framework and NUA—in a way that facilitates informed decision-making at the country level (Sarmiento, 2018).

Another aspect is the relationship between informal settlements and national urban systems. According to UNDESA (2014), more than half of the region's urban population lives in mega-cities (of 10 million or more), large (from 5 to 10 million), medium-sized (from 1 to 5 million), and emerging cities (from 500,000 to 1 million). According to the 17 national reports analyzed, this group of cities usually has larger concentrations of people living in precarious conditions in informal neighborhoods.

Table 4 shows the Latin American and the Caribbean urban system consisting of 47 cities that have a population of one million inhabitants or more. Four of these cities are considered 'mega-cities' (Rio de Janeiro, Buenos Aires, São Paulo, and Mexico City), five large cities (Caracas, Belo Horizonte, Santiago de Chile, Bogota, and Lima), and

the rest are medium-sized cities. Although literature recognizes that urban informality in this group of cities constitutes an important issue (Fernandes, 2011), the Habitat III National Reports do not address key aspects on it, such as, the proportion of urban population living in informal neighborhoods by city. Fernandes (2011) estimated that about 10 to 33 percent of urban land in the mega- and large cities of Latin America were occupied by informal settlements or slums in 2011. In all cases, the lack of locally pertinent and accurate data on these neighborhoods by national level and municipal governments is a significant concern (Sarmiento et al., 2018).

This lack of data may be in part due to the multiple definitions and approaches that exist on the causes and nature of informal settlements, which also depend on different geographical and historical realities (Sarmiento & Herard, 2015), and on the problem of constructing reliable indicators that allow evaluation of advances in this matter (Fernandes, 2011). Analyzed national reports advance in recognizing informal settlements as a real issue through metrics such as the proportion of urban population living in slums, percentage of people without access to potable water and sewerage service, but the reports are also limited by the lack of more detailed information such as identification of cities with higher levels of informality, their regional distribution, and the conditions regarding natural and anthropic hazards, among others. This affects our estimate of how informal settlements in the region are coping with disasters and advancing in parallel to the 'traditional' or formal urban development.

Table 4. Main urban agglomerations and cities in selected LAC countries

Country	Cities	No. of cities > one million inhabitants	Declared initiatives
Argentina	Buenos Aires, Córdoba, Rosario, Mendoza, Tucumán	5	6
Barbados	(Do not have)	0	2
Bolivia	Santa Cruz, La Paz, Cochabamba	3	3
Brazil	São Paulo, Rio de Janeiro, Salvador, Brasilia, Fortaleza, Belo Horizonte, Manaos, Curitiba, Recife, Porto Alegre, Belém, Goiânia	12	12
Chile	Santiago, Valparaíso, Concepción	3	3

Colombia	Bogotá, Medellín, Cali, Barranquilla	4	4
Costa Rica	San José	1	2
Cuba	La Habana	1	2
Dominican Republic	Santo Domingo	1	1
Ecuador	Guayaquil, Quito	2	4
Guatemala	Guatemala City	1	4
Honduras	Tegucigalpa	1	7
Jamaica	(Do not have)	0	8
Mexico	Área Metropolitana del Valle de México, Guadalajara, Puebla, Juárez, Tijuana, León, Zapopan, Monterrey, Culiacán	9	5
Paraguay	(Do not have)	0	4
Peru	Lima, Arequipa, Trujillo	3	6
Uruguay	Montevideo	1	6
Total		47	79

Source: Authors, 2019, based on the Habitat III National Reports of selected countries.

Several initiatives (i.e., projects and programs) developed by national governments whose purpose was to improve living conditions in informal settlements were identified. As shown in Table 4, leading countries in number of initiatives for informal settlements are: Brazil, Jamaica, Honduras, Argentina, Peru, and Uruguay. This list coincides with countries that have a larger number and proportion of informal settlements, with Mexico being an exception. The financial information of such initiatives —which would have enabled us to compare such efforts— was not included in the national reports in most cases.

In the final part of our results, we offer an exploratory analysis regarding the different approaches that each country adopted in its national report, to understand 'risk governance' and 'disaster resilience' in the context of informal settlements. As we pointed out at the beginning of this work (see Figure 1), these two dimensions were framed within the definitions offered by the Habitat III's issue papers.

Risk governance

According to the analyzed national reports, most of the countries in the region (i.e., Argentina, Brazil, Chile, Colombia, the Dominican Republic, Jamaica, Paraguay, and Peru) recognize the importance of the central government's role in creating an enabling environment that allows articulation, both vertically and horizontally (Renn, 2008), of different actors—public, private, academia, and civil society—and for the benefit of urban development.

Concepts such as 'inter-sectoral articulation,' 'multi-sectoral,' 'national, regional, and local actors,' 'actors from different sectors and levels,' among others, were used in national reports to refer to the multiplicity of actors at different geographical scales that make up the process of urban governance. The recognition of this network of actors should be seen as positive not only for urban development but also for disaster risk reduction (Sandoval & Voss, 2016). This relates to our idea that DRR is not only a matter of formally constituted governments but to a system of decision-making that involves actors from different sectors and levels (e.g., public, private, academia, and civil society). This is, for us, a reflection of how risk governance can be interpreted in the national reports.

From this point of view, we can say that the majority of analyzed reports did not go beyond a mere recognition —in a sort of 'declaration of principles'— of what they understand by governance. In most cases, countries provided evidence, in the form of public policies and legislation that supports vertical governance arrangements (as proposed by Renn, 2008) within state institutions, as for example, decentralization policies. Reports do not mention evidence on horizontal arrangements such as the participation of academia, private sector, or civil society. Countries such as Cuba, Honduras, Mexico, Paraguay, and Uruguay declare 'governance' mainly as an act of decentralizing the administration of state functions, and to grant more powers and autonomy to local governments. For these cases, community and civil society participation is critical, but their reports do not specify how and at what level that participation is taking place. We consider that more details in the form of such participation (see for instance the 'ladder of participation' of Arnstein, 1969) would help to better identify vertical and horizontal arrangements and have a more accurate view on the urban governance of risks in the region.

In sum, it is possible to observe many countries recognizing the importance of governance as a process of multiple levels and multiple actors. However, in relation to governance and disaster risk reduction in the context of informal settlements and slums, we observe a lack of clear mention of how governments negotiate decision-making with different actors at different levels, and how these practices are valued, systematized, and included in national reports.

Disaster resilience

The concept of 'resilience' was used by each country significantly less than other concepts such as 'informal settlements' or 'slums,' 'governance,' and 'climate change,' among others. Consequently, it was difficult to investigate how governments have approached disaster resilience in the urban context, and even more difficult from the perspective of informal settlements. Reports from Chile, Colombia, and Costa Rica only mention 'resilience' twice in the whole document, while Cuba, Ecuador, Honduras, and Paraguay mentioned it once. Nevertheless, and beyond the mere quantification of words, national reports do address resilience through other concepts such as 'capacity to resist' or 'capacity of recovery,' As explained in the introductory section, both notions reflect the idea of resilience as the 'ability to absorb' and/or 'bouncing-back' in the face of disastrous events.

In our review, countries that have addressed disaster resilience as both the 'ability to absorb' and 'bouncing-back' in the context of urban development are: Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Honduras, Jamaica, Mexico, Paraguay, and Uruguay. National reports from Barbados, Bolivia, Cuba, Ecuador, Guatemala, and Peru tend to focus on disaster resilience as the ability of communities 'to absorb' shocks. During the review of the reports, we could not verify reference to disaster resilience as the ability to 'learn' and reduce disaster impacts in the future (i.e., bouncing-forward), nor ideas as 'building back better' in relation to a transformative process. We argue that the problem with these initial conceptualizations, 'ability to absorb' and 'bouncing-back,' lies in governments focusing on making marginalized communities capable of absorbing impacts rather than addressing the root causes of marginalization in the first place.

Based on a systematic literature review on urban resilience, Béné et al. (2017) highlight the *momentum* that this concept has reached in the academic and development circles. Béné et al. (2017) criticize, nevertheless, how the 'overexposure' of the concept and its multiple meanings have made governments and local institutions adopt dimensions of resilience that suit them best. This has led countries to focus on physical works of mitigation, reduction of exposure to natural hazards, and disaster response. Finally, we note that governments have preferred

to continue with a reactive stance to disaster risks instead of adopting a more proactive and transformative attitude, as promoted by the Sendai Framework. As Batra et al. (2017) suggest: "The old simplistic ('bounce-back') notions of recovery as a return to pre-disaster normality are no longer viable, since they imply recreating conditions of vulnerability that lead to disasters" (Batra et al., 2017, p.11). From our perspective, disaster resilience as the ability to resist, recover, and especially to learn and transform, needs to delve further into urban policies, and reflect how governments work for improving life conditions in informal settlements.

Conclusions

So far, we have seen that the situation of urban precariousness in Latin America and the Caribbean is complex and presents several nuances in the selected countries. Two opposing realities seem to coexist: the absolute number of residents in informal settlements and their percentage of the urban population. On one hand, a group of countries composed of Bolivia, Brazil, Ecuador, Guatemala, Honduras, Jamaica, Mexico, and Peru, faces great challenges in improving life conditions for a significant proportion of urban population, including safer conditions against disasters. On the other, a group of countries in which -despite statistics-, urban informality and precariousness persist: Argentina, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Paraguay, and Uruguay. Perhaps the most alarming fact is that the population residing in precarious neighborhoods —104.8 million in 2014 (UN-Habitat, 2016)— has remained almost unchanged since 1990. Precariousness of housing and settlements, fragile socio-environmental conditions, and exposure to natural and anthropogenic hazards are elements that combine and contribute to a continuous process of disaster risk creation. The residents of informal settlements tend to be marginalized from the 'formal' development processes of cities, making it difficult for them to access all kinds of opportunities including those related to disaster risk reduction, thus perpetuating the cycle of poverty and precariousness.

During our exploration, we identified the acknowledgment of linkages between disaster risks and informal settlements among the Habitat III National Reports of selected countries, as well as a certain recognition of governance and resilience as important factors to improve life conditions in the informal settlements —but not on how making life safer against disasters in such neighborhoods. We believe that national reports do not offer a high level of detail or evidence on what countries were effectively doing, in terms of disaster risk reduction in informal settlements. In particular, there is no evidence on trying to improve governance systems and strengthen resilience

—as a process of 'bouncing-forward'— in the context of urban informality. The latter may explain the few references to the Sendai Framework in the reviewed reports, even though the Sendai Framework was conceived under the United Nations umbrella as the New Urban Agenda, and signed only one year prior to the completion of Habitat III.

With all this in mind, we again call attention to the lack of evidence and comparable data on the costs of addressing physical, social and economic deficits, the efforts to integrate informal settlements into the planning and management processes of the 'formal' urban development, and in particular, the intervention in the trajectories of disaster risk creation in informal settlements in a sustainable manner.

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