

CHAPTER 2 – MOVING FROM RECONSTRUCTION TO RESILIENT URBAN PLANNING FOR A BRIGHT FUTURE

WHY RESILIENT URBAN PLANNING?

Planning for resilient urbanization is about taking coordinated action to help shape urban growth, with the aim of supporting a country and cities' development objectives and managing natural disaster risk. As discussed in the previous chapter, the form that cities take can have very real impacts on urban productivity and livability. This form emerges from the interaction of decisions taken by firms, households, and the government. Firms decide where to produce, buy their inputs, and sell their outputs; households choose where to live and where to work; and governments make decisions that range from where to locate infrastructure investments to defining zoning regulations. Effective coordination of the actions of these three actors is therefore key in shaping a city's form and, through that, influencing its future.

In this chapter, we highlight social, environmental, and economic dimensions of the current form of urban development in Haiti. The analysis draws on household surveys and other existing data collection exercises, complemented with insights from satellite

imagery. As outlined in detail in Spotlights 1 and 2, we use these new data to explore how urban areas have expanded over time, how land use within cities has changed, and what the implications of these patterns of growth are for exposure to natural hazard risk. We also review the current governance framework for urban planning in Haiti, noting important advances made in recent years and the many challenges that remain. The objective of this chapter is to identify where the current weaknesses of urban development lay and what is needed to build a brighter future for resilient cities.

There are three key findings and messages from this chapter. The first is that urban residents live in crowded, unserved, and unsafe housing and neighborhoods. There are many negative externalities associated with these conditions, which can undermine the economic benefits of density. It is key for basic service infrastructure investment to catch up with the reality of urban expansion.

Second, Haitian cities are growing in an uncoordinated manner, with insufficient regard to natural disaster risk. New infrastructure can influence the decisions of households

*This chapter draws on background notes prepared by Chandan Deuskar, Benjamin P. Stewart, Nancy Lozano-Gracia, and Sarah E. Antos. The authors are also grateful for comments from Roland Bradshaw and Harley Etienne (University of Michigan).

and firms on where to locate. Given that much of the land around Haitian cities is highly hazardous, infrastructure investment decisions have important implications for the number of people and value of assets that are exposed to natural disasters. It is therefore paramount that risk assessments, risk optimization strategies, and land use planning are integrated into urban investment decisions.

Third, Haitian cities are marked by weak land administration. Opaque information on land ownership and poorly functioning land regulation hampers efforts to deliver basic services and integrate hazard risk into land use planning and building standards and can leave poor households vulnerable to eviction. A well-functioning land market is also central to harnessing the agglomeration benefits of urbanization, as it is the mechanism through which land is allocated for its most productive uses. Long-term efforts to improve the quality of land administration are thus central to the resilience of urban development.

How can Haiti address these challenges? Fundamentally, improving resilient urban planning capacity is a question of governance. Strong institutional frameworks are needed to guide decision making among the many players whose choices impact urban outcomes. The good news is that carefully prioritized and sequenced short-term projects can help build confidence in change and promote a virtuous cycle of governance (World Bank 2011b). This chapter identifies a number of tools that can simultaneously help address immediate urban challenges and also support long-term objectives of building confidence in collective action, supporting state-society engagement, and

strengthening government capacity. In this way, urban planning can help ensure that cities grow as economically vibrant, environmentally sustainable, and livable places. In line with the Haitian proverb mentioned in the opening of the report, this chapter provides options that look at today's problems, but with an eye on setting stepping stones for a brighter future.

CITIES IN HAITI ARE MARKED BY BASIC SERVICE DEFICITS AND HIGH EXPOSURE TO NATURAL DISASTER RISKS

High levels of population density are not supported by basic service infrastructure

In Haitian cities, most residents live in crowded conditions. Although precise data on overcrowding is not available, on average, urban households of between 4 and 7 members will share accommodation with only two bedrooms (DHS 2012). As outlined in Spotlight 1, settlement patterns are comparatively dense, even in smaller cities. This density, however, is not supported by basic service infrastructure. Urban areas have developed with inadequate basic services. As discussed in Chapter 1, this under-provision of basic services has come about as a result of specific historical, political, and financial conditions. It has important implications for current and future living standards.

Current water supply and sanitation (WSS) systems are inadequate to serve the urban population. As highlighted in Chapter 1, more than one-third (35 percent) of urban residents do not have access to improved sources of water (WDI 2015), and trends show that rates are declining.¹ Overall, only 58 percent of the Haitian population had access to drinkable

¹ Improved sources of water include piped water into dwelling, to yard, or to the neighbor; public tap water; tube well or borehole; protected dug well; protected spring; rainwater; bottled water or sold by company.

water from an improved source. This figure places Haiti 25 percentage points (p.p.) below the second worst performing country in the LAC region (the Dominican Republic) and among the 10 worst-performing low-income countries worldwide (slightly better than Eritrea, Niger, and Tanzania). Two-thirds (66 percent) of urban residents lack improved sanitation (WDI 2015).² The overall access rates in Haiti are 50 p.p. lower than the average country in the LAC region and 5 p.p. lower than the average low-income country. The 2012 DHS indicates that 48 percent of residents in Port-au-Prince and 41 percent of households in second-tier urban agglomerations use pit latrines with slab.³ At least 8 percent of urban residents practice open defecation (WDI 2015); and research suggests that this figure may be higher given that urban residents that rely on public toilets may resort to open defecation to meet sanitation needs at night (Tilmans et al. 2015).

Low levels of solid waste removal services exacerbate flood and disease risks. Solid waste management is central to ensuring productive urbanization, since effective removal of waste is vital for a healthy urban environment. Haiti has the lowest collection service coverage in the Latin American and Caribbean region.⁴ With an overall waste collection rate of 12.4 percent, Haiti lags far behind the next lowest country in the region, Paraguay, which collects 57 percent of waste produced and behind other low-income African countries such as

Senegal, Benin, Mali, and Ghana, with collection rates of 21, 23, 40, and 85 percent, respectively (Hoorweg and Bhada-Tata 2012). As indicated in Figure 1 (A), it also lags far behind other countries in the Caribbean. Furthermore, although information is scarce, it is thought that collection rates vary substantially within the country. Figure (B) presents information on collection rates from 2001; it shows that there is only one area of more than 100,000 inhabitants where more than half of the waste produced is collected.

In addition to this, none of the waste that is collected in Haitian cities is disposed of in a sanitary landfill. The most common form of disposal is use of open dumpsites, which accounts for 62 percent of waste disposal in the country or about 1.2 million tons of waste per year. This is the second largest share of dumping in Latin America, close to Guatemala's 69.8 percent, and ahead of Nicaragua's 59.3 percent. A large portion of waste in major cities is disposed of in water sources, exacerbating challenges of urban flooding and the associated toll of diseases.⁵ In addition to this, there are "congestion effects" of litter, uncollected garbage, and other signs of poor cleaning and maintenance. Looking ahead, these challenges are only set to increase. According to the World Bank's "What a Waste" report, estimated solid waste production is likely to skyrocket in countries such as Haiti, from an estimated 3,233 tons per day today to 11,152 tons per day by 2025.

² Improved sanitation facilities include non-shared toilets flushing to piped sewer system, to pit latrine, and to septic tank, pit latrines improved by ventilation or with slab, and composting toilet.

³ Pit latrine with slab is a dry pit latrine whereby the pit is fully covered by a slab or platform that is fitted either with a squatting hole or seat. The platform should be solid and can be made of any type of material (concrete, logs with earth or mud, cement, etc.) as long as it adequately covers the pit without exposing the pit contents other than through the squatting hole or seat.

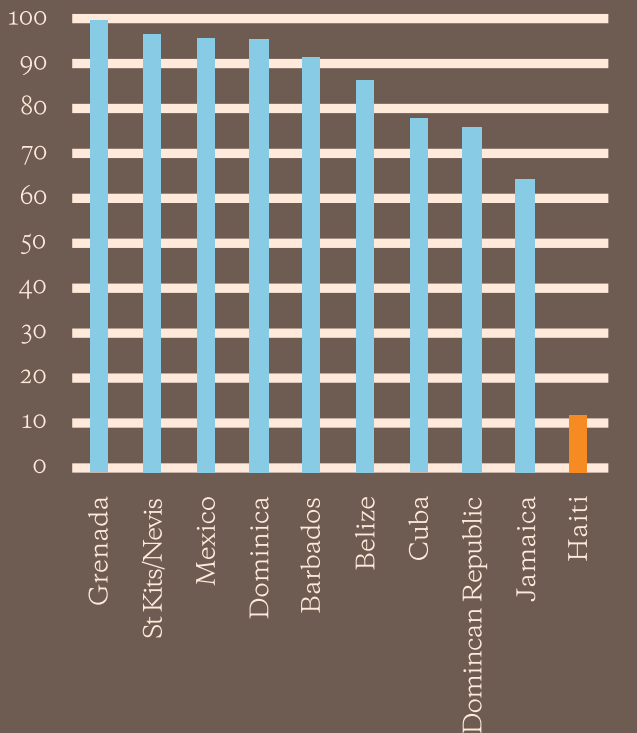
⁴ Comparison of data from Regional Evaluation of Solid Waste Management in Latin America and the Caribbean, 2010, and data for Haiti in 2012 taken from the "L'évolution des conditions de vie en Haïti entre 2007 et 2012" (IHSI, IRD, Dial, Nopoor, ANR. 2014).

⁵ See Hoorweg and Bhada-Tata. (2012).

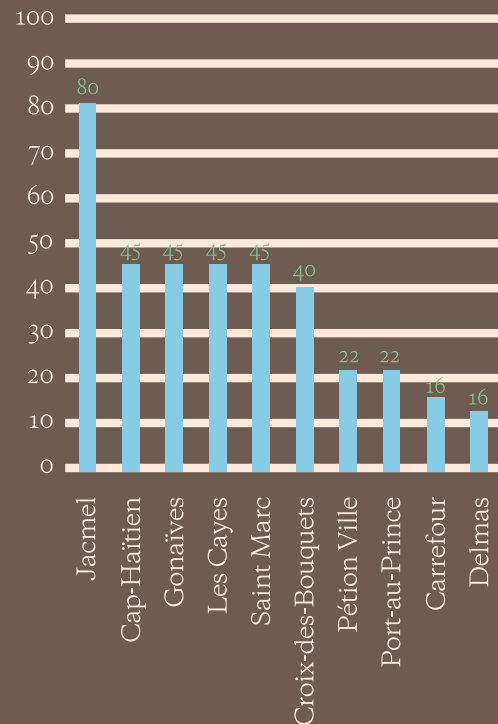
Figure 1.

SOLID WASTE COLLECTION RATES ARE LOW

(A) Waste collection rate



(B) Waste collection rate, cities of 100,000 or more in Haiti



Source: World Bank calculations based on (i) *L'évolution des conditions de vie en Haïti entre 2007 et 2012. IHSI, IRD, Dial, Nopoor, AN 2014 (Haiti)*; (ii) *Jamaica Population and Housing Census 2011 (Jamaica)*; (iii) *Censo Población y Vivienda 2010, Volumen 2, pg. 470 (Dominican Republic)*; (iv) *UNSTAT 2013 (Dominica)*; (v) *EVAL 2010 (Belize)*; (vi) *INTEGRATED SOLID WASTE MANAGEMENT PROJECT – GRENADA, Caribbean Dev Bank, Appendix 2.3. 2014 (Granada)*; (vii) *Oficina Nacional de Estadística e Información, Chart 2.48 (p. 53). (Cuba)*; (viii) *SIDSDOCK 2015 (St Kitts/Nevis)*; and (ix) *IADB 2015 Capacity Building workshop on Solid Waste Management in Barbados. (Knowledge Sharing Programme KSP-IADB). 2015. Source for cities within Haiti: What a waste, 2012. Annex G. Collection Data for Cities over 100,000 people (Data date: 2001)*

There is urgent need for additional basic service infrastructure investment to meet growing needs. Current infrastructure deficits in Haiti can be attributed to a number of factors, including financial and human capital resource constraints and structural deficiencies in the management of existing networks. At the national level, WSS services are heavily dependent on external financing, with 61 percent of the National Drinking Water and Sanitation Directorate (DINEPA) operating expenditures and 95 percent of investment costs financed by development partners.⁶ In urban areas, only 54 percent of the operating expenditures (excluding depreciation) of urban water operating units are covered by water revenues.⁷ The pace of urban growth is adding pressure to this situation, with the experience of medium-sized cities being a case in point; medium-sized cities are grappling to provide services in response to sudden increases in population (Country Partnership Framework).

There are high social, economic, and environmental costs to these basic service deficits in dense urban areas. Poor quality, dense sanitation increases exposure to communicable diseases such as diarrhea, typhoid, dysentery, and cholera. In crowded cities, shared latrines are associated with higher exposure to health risks (Heijnen et al. 2014; Fuller, Clasen, Heijnen, and Eisenberg 2014). If pit latrines are close to groundwater wells, they can contami-

nate potential sources of drinkable water (Graham and Polizzotto, 2013). Furthermore, workers that manually empty latrines in Haitian cities – known as *bayakou* – have been recorded dumping collected waste on the ground, in ravines, and even in rivers (Katz, 2014). As further outlined in Box 4, *bayakous* have appeared as a response to the wide gaps in the availability of adequate sanitation infrastructure. The lack of infrastructure and the unsafe conditions in which they are forced to work enable the spread of diseases and can increase health challenges related to flooding. Indeed, it is notable that 42.5 percent of deaths in Haiti are attributable to communicable diseases and that water-borne diseases are a leading cause for mortality of children in Haiti (World Bank 2014).

The current pattern of urban growth exacerbates basic service delivery challenges. The urban development patterns of large Haitian cities such as Cap-Haïtien and Port-au-Prince create additional obstacles for basic services. In overcrowded settlements in Port-au-Prince, households often do not have sufficient room in their houses for private sanitation solutions⁸; while some settlements in Cap-Haïtien are in areas where pit latrines cannot be dug, because the buildings are constructed on compacted solid waste, above land that is otherwise unstable due to sea water encroachment (Tilmans et al. 2015; Pelling 2011). In the

⁶Source: FY 2013/14 DINEPA Budget. The IADB and the AECID are the major providers of funding and technical assistance for DINEPA, with the World Bank, UNICEF, the Swiss government, the US CDC, and other organizations also providing assistance.

⁷PAD: Sustainable Rural and Small Towns Water and Sanitation Project (P148970), World Bank 2015.

⁸It is notable that in their report of a pilot Container Based Sanitation project, Russel et al. (2015) note that one-third of initially selected participants were screened from the project due to having insufficient space in their dwelling for household level sanitation facilities.

BOX 1 – URBAN FLOODING IN FOCUS

Our analysis of satellite data indicates that more than half (51 percent) of built-up areas in Haiti are exposed to flood events. The area exposed is rising: the data indicates that built-up areas exposed to flooding increased by 87 sq. km between 1990 and 2011. Furthermore, the proportion of urban land exposed to floods is greater than non-built-up land: one-fifth (20 percent) of urban land is exposed to floods, compared with only 6 percent of Haitian land in general. Unregulated growth increases exposure to flood risks, as can be seen in Cap-Haïtien. Analysis of satellite imagery suggests that pockets of irregular settlements have appeared in different areas of the city, in both the city center and the outskirts of the city (see Spotlight 2 for further details). We estimated that

Figure 2.

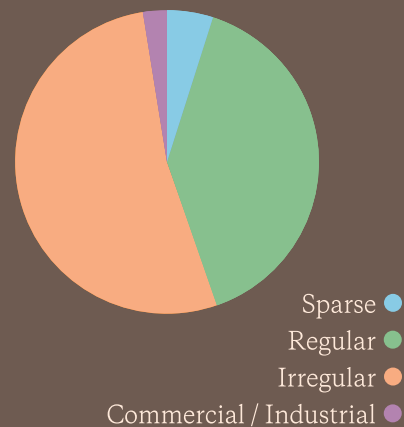
CAP-HAÏTIEN FLOOD AND EROSION RISK



In 2010 there were 1,714 rooftops within 50 meters from the Haut du Cap's Bassin Rhodo by 2015 that number jumped to 2,274, a rise of 32 percent.

Of those 2,274 rooftops, a high proportion of them are part of an irregular residential neighborhood. More specifically, 55 percent of the rooftops located in this highly flood-prone land appear irregular.

Share of Buildings within 50 meters of the river basin 2015



Note: Rooftop points created in 2010 and provided by CNIGS offered a baseline. New structures that appeared in the 2015 image were manually added.

about 72 percent of Cap-Haïtien's buildings in 2015 had been constructed on flood prone land.⁹ Of the buildings located in high flood risk areas, 22 percent of them are located in neighborhoods that have been classified as irregular, and therefore structurally vulnerable, using semi-automated methods for satellite imagery classification.¹⁰ Furthermore, construction in these areas is ongoing: despite the fact that the images from December 12, 2005 and April 15, 2015 reveal large amounts of inundation along the southern and eastern side of the Haut du Cap river estuary (Bassin Rhodo), the number of houses in this area increased by 32 percent over this time period. This can be seen in Figure 2.

Urban form matters for the severity of flood incidence, and urban planning tools can help mitigate damage. Flood risk is driven by exposure to weather events and the physical vulnerability of cities, which is often impacted by a range of public policy decisions, including watershed management and deforestation. In urban areas, the challenges of flooding are often exacerbated by poor planning practices. For example, as paving and other impermeable surfaces increase, the importance of well-functioning drainage for storm water run-off increases. Vulnerability to urban flooding can be addressed through a combination of structural and non-structural measures. Structural measures are those that help control the flow of water - for example, through investment in drainage and water barriers. Non-structural measures include information dissemination and evacuation plans, which help keep people safe from flooding. The case of Sao Bernardo do Campo, highlighted in the recommendations section of this chapter, is an example of an approach that integrates both structural and non-structural measures to address flooding, while also integrating flood management with other development objectives.

case for solid waste management, narrow roads impede collection vehicles from reaching houses. The urban form thus adds both technical and financial strains to efforts to meet service deficits.

The current pattern of urban growth also undermines living standards by creating situations opportunities for violence. As noted in Chapter 1, urbanization and poverty reduction are closely connected. Yet the shape that cities take has important implications for social risks such as exposure to crime. There is a link between lack of public services

and even features of the urban built environment such as narrow winding streets and social wellbeing. This is because the design of built environment can influence the ease with which interaction in public spaces can be monitored by other users and the extent to which different groups such as people of different ages or gender feel ownership and capacity to use them (World Bank 2011). Litter and solid waste dumping can also contribute to the perception of lawlessness, affecting both opportunistic crime and the sense of security felt by a victim.¹¹

⁹For this calculation, the city of Cap-Haïtien consists of 4 sections: Bande du Nord, Haut du Cap, Petite Anse, and Basee Plaine.

¹⁰This "irregular" label can be considered a proxy for relatively lower income neighborhoods and from a remote sensing/technical perspective means the area is characterized by small, unorganized buildings.

¹¹The impact of physical disorder such as litter on community decline is based on the Broken Window theory (J. Q. Wilson, G. L. Kelling, 1982) which suggests that signs of disorderly and petty criminal behavior trigger more disorderly and petty criminal behavior, thus causing the behavior to spread. This may cause a development sequence in a neighborhood leading in the medium and long term to decay and deterioration of the quality of life of its inhabitants.

Table 1.

THE PROCESS TO REGISTER PROPERTY IN HAITI IS CUMBERSOME

STEP TO REGISTER TRANSFER OF LAND	ACTORS	ESTIMATED COST	ESTIMATED TIME
1. <i>Permission to survey land</i>	Commissaire du gouvernement (in commune)		2 months
2. <i>Survey land*</i>	Surveyor	HTG 15,000	1 month
3. <i>Prepare sales agreement</i>	Notary	1 percent of sale price; VAT (percent varies by property type)	2-3 weeks (simultaneous with surveying)
4. <i>Obtain ‘avis de cotisation’ and pay for registration</i>	DGI	Various fixed fees and supplementary taxes and stamp duty, as well as fees for registration, transcription (based on percentage of property price)	1 day
5. <i>Register sale</i>	Local community office of DGI		6-9 months

Source: Doing Business 2017

*** land surveying is required every ten years and can be no older than five years at time of transaction**

The pattern of urban growth in Haiti also increases exposure to natural disaster risk

Haiti is considered one of the world’s most exposed countries to multiple natural hazards, including hurricanes, floods, erosion, droughts, earthquakes, and landslides. Natural disasters can wipe out advances in living standards in urban areas and further exacerbate basic service deficits. Overall, historical data for the period of 1976-2012 indicates that average damages and losses associated with hydrometeorological events

alone are estimated at an amount equivalent to almost 2 percent of GDP per year.¹² In addition to the immediate costs of humanitarian disasters, there are often hidden longer-term costs of natural disasters in urban areas. For example, in the aftermath of the 2010 earthquake, increased reliance on off-grid energy supply such as diesel generators or biomass burning, as well as demolition and construction efforts, may have contributed to rising levels of harmful air pollution in cities (Davis and Rappaport 2014).¹³

¹² Diagnostic sur l’impact économique et budgétaire des désastres en Haïti, World Bank 2014

¹³ Although there is no publicly available data on air quality in Haiti, insights from independent research indicate that air pollution may be a serious concern in large cities, particularly for households and informal vendors in densely populated settlements. Davis and Rappaport (2014) sampled the air quality in Port-au-Prince and Cap-Hatien in 2012 and 2013. The PM2.5 levels recorded in

BOX 2 – CORRUPTION IN HAITI: A THREAT TO DEVELOPMENT AND LIVES

According to the 2016 Corruption Perceptions Index (CPI) of Transparency International, Haiti ranks 159th out of 176 countries for perceived levels of public sector corruption. It obtained a score of 20 of a maximum of 100, along with countries like Burundi, the Central African Republic, Chad, and the Republic of Congo.

Corruption thwarts economic growth, discourages foreign investment, and reduces resources for infrastructure, public services, and anti-poverty programs (Robinson 1998; Ugur 2014). In 2004, the Haitian government established the Anti-Corruption Unit (*L'Unité de Lutte Contre La Corruption [ULCC]*), an autonomous agency under the Ministry of Economy and Finances tasked with fighting corruption in all its forms within public institutions. Despite some improvements, Haiti still ranks lowest in control of corruption and government effectiveness compared to its LAC peers. Corruption in the country takes form in the corruption of institutions responsible for rule of law, embezzlement of public funds by political and private organizations, payments to government-associated individuals for goods not provided and services not rendered, and abuse of discretionary accounts by government officials, among others.

Corruption has also been associated with the impact of natural hazards in Haiti. Ambraseys and Bilham (2011) observed the link between corruption and deaths in earthquakes and calculated that 83 percent of all deaths caused by building collapse since 1980 took place in countries scoring consistently low in the CPI. They point out that compliance to earthquake building standards depends on responsible governance, which, among other factors, can be undermined by corruption. Corrupt practices in the construction industry, such as bribery in the form of awarded construction contracts and corrupt inspection practices, among others, are a major contributor to the death toll in the wake of a natural disaster. Such is the case in Haiti, where an estimated 200,000 people lost their lives as a result of the 2010 earthquake.

Sources: Ambraseys and Bilham, 2011; Robinson, 1998; Singh and Barton-Dock, 2015; Ugur, 2014.

Analysis of satellite data indicates that the vast majority of built-up areas are vulnerable to natural hazards. As discussed in depth in Spotlight 1, most land in all cities is considered highly exposed to earthquake hazard. Furthermore, built-up areas are disproportionately concentrated in *high* seismic hazard zones. One quarter of the country's land (26 percent) is exposed to erosion, and more than half of all urban areas are considered at flood risk (see Box 1). Only in terms of erosion and landslides

are built-up areas less prone to risks than other parts of the country, but there are still areas within cities that are highly exposed.

Urban expansion continues to occur in hazardous areas, resulting in growing numbers of people exposed to disaster risk. The proportion of built-up area exposed to risks has remained steady over time in Haiti, suggesting that the pace of growth has been just as strong in risk areas as in areas with less risk (see Spotlight 2 for further details). This pattern of growth increases the number of

the Port-au-Prince sample sites would be considered "hazardous" (18 percent of cases) or "very unhealthy" (41 percent of cases) by US Environmental Protection Agency standards if they were observed over a 24-hour period. The PM_{2.5} levels recorded in Cap-Hatien traffic were higher than levels published for any other city in a developing country other than Nanjing, China.

people exposed to risk.¹⁴ Indeed, it is notable that of the 113 landslides that have occurred since 1994 (and mapped by CNIGS), almost half of them have taken place in densely or intermediately densely populated areas. This underlines the urgency of incorporating risk information into land use planning, as will be discussed further below.

Current growth patterns also lead to greater exposure of assets, such as water and sanitation infrastructure and education facilities. The government of Haiti estimated that the 2010 earthquake resulted in USD 15 million in damages to pre-existing water supply infrastructure, including reservoirs and pipes. In the capital, one of the five buildings of the Autonomous Metropolitan Drinking Water Plant (CAMEP) was destroyed, and 15 percent of the 600 private water sales outlets in the metropolitan area were damaged (World Bank, 2010). Overall, the housing sector has incurred the highest share of damages and losses in recent major hydrometeorological events, 28 percent of total damages and losses for hurricanes Jeanne (2004), Faye, Gustav, Hanna, and Ike (2008), and 31 percent for Hurricane Matthew (2016).

WEAK LAND ADMINISTRATION, INAPPROPRIATE REGULATION, AND INFORMATION GAPS HAMPER EFFECTIVE DECISION MAKING AND EXACERBATE PLANNING CHALLENGES

Vital building regulations are not enforced

The frequency and intensity of disaster events in Haiti make land use zoning and building codes vital. Building codes are very important in Haitian cities, given the high percentage of urban areas that are exposed to natural disaster risk. Haiti has developed several tools to strengthen the housing sector since the 2010 earthquake, including: (i) the National Building Code, which integrates retrofitting (2012); (ii) guidelines for repair and construction of small masonry buildings (2011); (iii) the National Housing Policy (2013); and (iv) a communication strategy to promote better building processes in Haiti. The World Bank is also supporting the Ministry of Health to reinforce their “safe hospital” unit and the Ministry of Education on safe school guidelines and has supported the Ministry to build safe community schools in underserved areas (World Bank 2015a). Challenges remain, however, and many buildings damaged in central Port-au-Prince during the earthquake have yet to be repaired. Data from the 2012 DHS survey indicates that 54 percent of respondents in the metropolitan area of Port-au-Prince said that their house was damaged during the earthquake. Of these, 63 percent said that the damage was evaluated by a team of experts, but only just under 40 percent of those that had been evaluated confirmed their buildings had been completed or were in the process of implementing the needed repairs.

¹⁴ By some estimates, increased density of population in exposed areas in Port-au-Prince and Gonaïves in the second half of the 20th century has led to between a doubling and quadrupling of risk associated with tropical cyclones (Klose 2011).

There are, however, fundamental challenges in translating building codes into common practice, including both financial constraints and the difficulty of attracting and retaining qualified personnel to oversee and enforce them. Enforcement is particularly challenging (see Box 2). In addition to this, affordability remains a major concern for many households. Sustainable construction practices require expensive materials and qualified workmanship. The majority of Haitians live in self-produced housing (i.e., informal housing that is built without the appropriate technical expertise) and is incrementally expanded in line with households' needs and available resources. Housing finance is almost nonexistent, and less than 15 percent of the population even have an account at a financial institution (WDI 2014). Many urban residents are tenants (USAID 2016).¹⁵ A number of innovative efforts to increase the supply of safe rental housing were piloted in the aftermath of the 2010 earthquake. These have met with short-term success and have been replicated in other countries - such as in the Philippines in the aftermath of Typhoon Haiyan

- but there is a need to explore how lessons from rental support cash grants can be transformed to support long-term improvements in the rental sector.¹⁶

Alongside limited enforcement of vital building codes, land administration is cumbersome. It is expensive and time-consuming to register property and gain building permission. Haiti ranks 180th in the World Bank's Doing Business ranking in terms of ease of registering property and 166th for getting a construction permit. The process for registering a land transaction is conducted in accordance with stipulations set by a law from 1890, and there is no mechanism to file a complaint against a mistake made in the transaction registration process. The steps are set out in Table 1 below. Although the number of steps itself is comparable to that of OECD countries, the process takes nearly 14 times longer.¹⁷ Construction permit fees, in turn, are estimated to be as high as 15 percent of the total cost of construction, which is much higher than the average of 2.5 percent in the Latin America and Caribbean region.

¹⁵ According to the Haitian statistics agency, 53 percent of Port-au-Prince residents in 2010 were renters. This number increases to 65 percent if households rent the land that the house they "own" is built on. During the 2010 earthquake, Oxfam America estimated that 75 percent of internally displaced persons in camps were renters (Etienne 2012).

¹⁶ Cash grants empower recipients to prioritize their own needs and make decisions about where to locate. The project design included a provision known as "Keep the Change" to mitigate any potential upward pressure on rental prices. This provision encouraged households to negotiate their rent with landlords, by allowing the tenant to keep the difference between the rental allowance and the agreed rent paid. The inclusion of a verification visit to ensure that the rental housing met minimum safety standards acted as an incentive for landlords to improve the quality of housing offered. Further efforts are needed to explore the long-term sustainability of innovative programs such as this. While the short-term impacts were hailed as highly successful, some estimates indicate that as few as one quarter of beneficiaries renewed their contract at the end of the year, with insufficient funds being cited as the main reason for moving (Phelps 2016). It has also been suggested that some households used their grant money to purchase land in irregular areas.

¹⁷ On average the process takes 312 days compared to 22 days in OECD countries and 68 days in the Latin America and Caribbean region average. It is also estimated that the process costs 7 percent of the value of the property, compared to 6 percent in the LAC region, and 4 percent among OECD countries.

The high costs of formal land development impact adherence to vital regulations such as building codes. Inappropriate regulation drives up the costs of land development and is a disincentive to formal development of land. As such, it does little to generate government revenue while undermining compliance with vital safety standards (GFDRR 2011). Furthermore, across the world, inappropriate land regulation processes have been linked to informal development, as households are thought to be pushed out of formal urban housing and into the informal sector. Although it is difficult to provide reliable estimates of housing needs, most attempts suggest that between 300,000 and 400,000 units are needed - while the formal system has never produced more than 4,000 housing units per year (Hoek-Smit 2013). Estimates suggest that 60 percent of Haitian households do not have any formal document of ownership (USAID 2010).

Opaque land ownership is a constraint to infrastructure and housing investment

The quality of land administration in Haiti is low (Figure 3). Largely inspired by the French system, the current system of property registration relies on judgment of a restricted number of public notaries and surveyors, which are positions appointed by the President. In addition, the rights to the profession are usually inherited, and the procedures to integrate new professionals lack transparency (IMF 2015 and Oriol et al. 2017). Furthermore, the land registry system is fragmented. The Office of the Cadastre is housed under the Ministry of Public Works; geospatial imagery is kept in the National Center for Geospatial Information (*Centre National de L'information Geospatiale* [CNIGS]) in the Ministry of Planning; and

the responsibility of registering land transactions belongs to the General Tax Office (*Direction Générale des Impôts [DGI]*) of the Ministry of Finance who notes land transactions by hand in a chronological book of records dating back to 1824 (IMF 2015). The lack of clear land records and necessary planning tools, as well as fragmented governance, have many negative repercussions for resilient urban planning.

Lack of transparent and accessible land ownership records is a constraint on urban housing and infrastructure investment programs. Water, sanitation, or transportation infrastructure projects face extensive implementation delays when the design is based on out-of-date maps. Furthermore, lack of clear land ownership records can undermine large-scale urban investment projects (see Box 3), as lack of trust in the fairness of the proceedings can cause urban public-private partnership projects to become bogged down in costly delays and controversies (UN Habitat 2011). Land records are also essential for an effective property taxation system, which in turn has implications for local municipal finances and thus the capacity of local government (as discussed further in Chapter 4). In addition to this, in the past, it has been an avenue for political corruption (see Box 4.).

Uncertainty over property rights has been a constraint on the development of safe, affordable housing. A number of donors and NGOs have developed projects to provide a range of housing solutions, including new infill houses, new finished houses in green field developments, and multifamily units. Homes are often subsidized through a highly subsidized model of leasing-to-own (the cost of the new houses ranges from USD 12,000

BOX 3 – THE UNCERTAINTY IN LAND LAWS AND ITS IMPACT ON PEOPLE’S LIVES

Investment in infrastructure within and between cities is seriously undermined by the uncertainty of Haiti’s land laws – ultimately affecting real people. In 2013, *Reuters* reported the case of the National Road No. 7, a 56-mile road project meant to connect Les Cayes – a port city in the south – with Jérémie – a city in Grand’Anse, one of Haiti’s poorest *départements*. The USD 100 million project was announced in 2008 and was backed by the Canadian International Development Agency and the Inter-American Development Bank.

Shortly after beginning the works, the bid-winning company abruptly abandoned the construction site. The project had run into parcels of land whose ownership was unclear and for which displaced residents had not been compensated. The company left behind incomplete infrastructure works, roadside homes seriously damaged by its trucks, and households with demolished homes. National Road No. 7 remained then as a poor-quality, single lane, and dangerous road, especially in most remote areas.

Source: Ferreira, 2013.

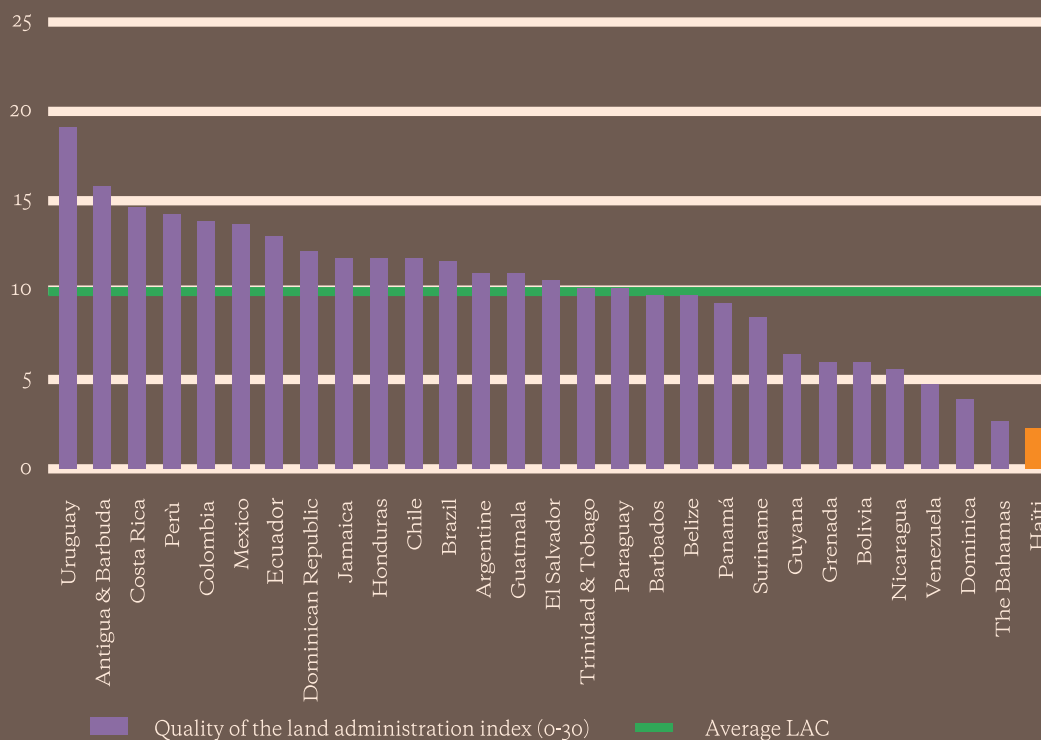
to USD 40,000 per unit and occupiers are expected to make payments of between 1 and 5 percent of that value). Yet the absence of secure titles that can be collateralized are a major constraint to affordability of these projects, as credit is only available through expensive short-term loans (Hoek-Smit 2013).

Lack of clarity of land ownership adds uncertainty for citizens, can be a source of tension between citizens and the state, and even with emergency relief and other non-government organizations (NGOs). Although most households lack property documentation, there exist a combination of formal and informal processes that – although complex – allow households to inherit, manage, lease, and transfer land securely (Tarter et al. 2016). Nonetheless, mechanisms to address grievances or conflicts are lacking. Land arbitration processes are opaque, time-consuming, and highly variable from one commune to another (see Annex 3 for details of the legal framework for managing property disputes). On average, legal cases take five years to resolve (OAS 2010). Although there are no

direct records to measure the extent of land conflicts between citizens, they are thought to be increasing as competition for land intensifies with urbanization (Etienne 2012; USAID 2010). Furthermore, as USAID stressed, in the aftermath of disasters, households with weak or contested land tenure claims find themselves increasingly vulnerable to efforts by actors with the ability to take advantage of the disruptive circumstances to concentrate their land holdings (USAID 2010). Eviction can even take place as part of public programs: Amnesty International recorded that hundreds of families were evicted from downtown Port-au-Prince to make way for construction of public administration buildings (Amnesty International 2015). Furthermore, lack of clarity over ownership has hampered emergency response in the aftermath of the 2010 earthquake, as lack of clear property rights was a constraint on NGOs ability to support households with financing to recover and/or repair property (International Housing Coalition 2011). In addition to this, there were instances where

Figure 3.

OVERALL QUALITY OF LAND ADMINISTRATION IS POOR COMPARED WITH LAC PEERS



Note: this index is comprised of information on reliability of infrastructure, transparency of information, geographic coverage, equal access to property rights, and land dispute resolution. The Index is scored from 0 to 30. The higher the score, the higher the quality of land administration. The dotted line represents the average LAC.

Source: Doing Business 2017.

lack of clarity over land ownership undermined trust in the work of some aid efforts, as there were cases where NGOs became implicated in land conflict after being granted permission to establish operations in areas they were unaware were the subject of ownership disputes (Etienne 2012).

Efforts are underway to introduce a land cadastre.¹⁸ Efforts to modernize this system have faced numerous challenges, not least

the loss of land records that occurred with the destruction of the DGI building in the 2010 earthquake. The Haitian government, under the leadership of the Inter-Ministerial Committee for Territorial Development (*Comité Interministériel d'Aménagement du Territoire [CIAT]*) is currently proposing to update the legal framework for land tenure systems, modernizing land administration tools, and elaborating a methodology for

¹⁸ A land cadastre is a public inventory of land. The core information that it usually contains on all properties includes: boundaries; ownership or interests (rights, restrictions, and responsibilities); improvements, in the form of buildings and infrastructure; and an estimation of the value. The information in a land cadastre is methodically arranged and displayed in maps.

BOX 4 – PROPERTY RIGHTS, INSTITUTIONAL CAPACITY, AND STATE FRAGILITY

The World Development Report of 2011 stressed that legitimate institutions are the “immune system” that helps defend countries against the internal and external stresses that result in conflict and violence. State, market, and social institutions that provide security, justice, and economic opportunities are thus central to peace, stability, and development. Property rights and broader land market institutions are examples of such institutions. They are particularly important where rapid urbanization weakens social cohesion and informal dispute-resolution mechanisms.

The literature on land in conflict environments underlines this message further. Many studies have stressed that where land ownership records are not transparent and publicly accessible, they can be exploited by political factions to buy support for either their government or rebellion (Global Land Tool Network, online). Lack of transparency over land rights and use can even be used as a form of gerrymandering: changes to land use rights motivated by a desire to influence settlement patterns and thereby shape electoral outcomes (de Waal 2009). Public land assets are substantial in many countries across the world, and self-interested public authorities can capture private benefits of this land by amending the user rights associated with the land or by selling off these public assets at below market rates to allies. Indeed, it is notable that in Haiti it has been alleged that the use of land to curry political favor was common under both Presidents Duvalier and Aristide (Etienne 2012).

How can property and land market institutions be strengthened? The World Development Report highlights several key messages for transforming institutions in fragile situations. Institutional reform is never easy, and it is further complicated where there is a legacy of violence that can undermine trust in government and hinder cooperation. Reforms in themselves may be blocked or derailed by actors who risk losing out from changes: any significant shift in the status quo is likely to create both winners and losers, and if the losers are well-organized they can form a powerful lobby against reform.

Thus, for example, experience suggests that actors who benefit from the current system of property registration may resist reform to the system out of self-interest. Furthermore, in contexts where there is lack of trust between citizens and state, individual households may be strongly suspicious of government efforts to collect cadastral information. Nonetheless, global experience suggests that institutional strengthening can be attained, through an approach that combines confidence building, participation, and careful prioritization of reform. As will be discussed in greater depth below, these are principles that can also help guide institutional strengthening for resilient urban planning. In short, there are potentially strong mutual benefits between

Sources: Ambraseys and Bilham, 2011; Robinson, 1998; Singh and Barton-Dock, 2015; Ugur, 2014.

the establishment of a “pre-cadastre,” which draws on geo-referenced data on land tenure to link parcels and land ownership. Initial piloting stages have been completed. Box 5 highlights some of the findings of one such pilot. Although the process is likely to be challenging to complete, progress in this area can have many important long-term benefits. These could also extend to improved disaster risk management, as land ownership maps are also a key tool for disseminating information and enforcing regulation on hazard areas; effective property taxation can be a tool to incentivize compliance with building norms¹⁹; and current and accessible land records can also help authorities to react in the aftermath of a disaster.²⁰

DESPITE RECENT EFFORTS, GOVERNANCE CHALLENGES REMAIN A HURDLE TO LONG-TERM RESILIENT URBAN GROWTH

Since 2010 government activities in urban areas across all levels have been strongly focused on reconstruction activities. This has included the challenging task of coordinating the work of many non-government organizations (NGOs) and international development organizations whose activities also shape the urban space.²¹ At present, the government is undertaking a series of reforms as part

of a broader effort to transition from reconstruction to comprehensive forward-looking planning. This approach has combined institutional decentralization, as well as significant efforts to provide strategic vision to coordinate activity in specific localities and sectors.

Urban planning responsibilities are formally divided among a number of different bodies. These are highlighted in Figure 4. The three main bodies with planning responsibilities are: The Ministry of Planning and External Cooperation (MPCE); the Ministry of Interior and Local Authorities (MICT); and the Ministry of Public Works, Transport, and Communications (MTPTC). Four sector-specific ministries also conducting important activities that shape urban form include: The Ministry of Agriculture (MARNDR), the Ministry of Health (MSPP), the Ministry of Environment (MDE), and the Ministry of Finance. These ministries house agencies that have roles that are central to effective planning, such as Office National du Cadastre (ONACA, housed under the Ministry of Public Works), the Centre National de l’information Geospatiale (CNIGS, under the Ministry of Planning), and the Direction Générale des Impôts (DGI, under the Ministry of Finance). The Comite

¹⁹ In Turkey, houses that abide by regulation and pay taxes are eligible to participate in an earthquake insurance fund (the Turkey Catastrophe Insurance Pool), a mechanism that resulted in insurance coverage rocketing from 600,000 to 3.5 million in the year it was established (GFDRR 2011). For further discussion on the state of taxation collection in Haiti, please see chapter 4.

²⁰ For example, the existence of documented and up-to-date public cadastral records and urban hazard maps, as well as inventories of public roads and infrastructure was a vital tool in the aftermath of Hurricane Katrina hitting New Orleans in 2005. The New Orleans authorities salvaged these legal records and used the information to help inform relocation responses, provide data for insurance companies and banks to respond, and to plan the rebuilding of basic service infrastructure (World Bank blog, 2016).

²¹ NGOs build houses, deliver vital services, and help with disaster risk management assistance in Haiti. These activities shape urban space and require considerable coordination and oversight. Although a “cluster system” was introduced to coordinate the international humanitarian response to the 2010 earthquake, it is widely believed that only a fraction of the estimated 10,000 NGOs present in Haiti are registered under this system. <http://blogs.worldbank.org/latinamerica/what-haiti-taught-us-all>

BOX 5 – AN EFFORT TO DOCUMENT THE LAND USE AND OWNERSHIP PATTERNS IN PAP

As part of the efforts around implementing the Plan Foncier de Base in Haiti and collect accurate and up-to-date information on land use and ownership, a pilot was implemented in 2013 in part of the district of Bas Peu-de-Chose, outside the boundaries of the colonial city of Port-au-Prince, in a neighborhood called Le Bas Peau-de-Chose. This effort included surveying a total of 997 plots, with 798 parcels covering 26 hectares.

Analysis from the information collected suggests that 41 percent of parcels are between 100 and 250 square meters. Most of these plots (82 percent or 73 percent of the surveyed land) is controlled by private owners. State-owned land represents 8 percent of the parcels and 27 percent of the surveyed area; it is characterized by large land lots: 22 percent of state-owned parcels cover 89 percent of the state-owned area). Overall, the neighborhoods of Bas Peau-de-Chose investigated remain mainly a residential area with 48 percent of plots being residential; another 41 percent is either devoted to commercial activities or occupied by public services, while the remainder is a combination of residential and commercial use.

A considerable number of owners do not live in their property (29 percent). Moreover, even though such private parcels have been purchased by individuals (36 percent) or are held under undivided ownership, *en indivision* (31 percent), property titles were collected only for 31 percent of them; 77 percent of these documents were notarized. Further, the information collected for this area suggested that only 1 percent of all the parcels in the area analyzed are in tenure conflict, suggesting ownership conflicts are not of big concern in the area studied. In general, key challenges observed in the pilot neighborhoods of Bas Peu-de-Chose in regards to the misuse of land stem from the nearly complete absence of rules of urban planning and mismanagement of land.

Source: Contributed by CIAT based on CIAT, 2017. *Les Cahiers du foncier du CIAT. Le Plan Foncier de Base à Bas Peu-de-Chose. Les leçons apprises. Secrétariat Technique du Comité Interministériel d'Aménagement du Territoire. No. 2, July, 2017.*

Interministeriel d'Aménagement du Territoire (CIAT), which was created in 2009 and is headed out of the Prime Minister's office, has overall coordinating responsibility for all ministerial initiatives regarding territorial planning.

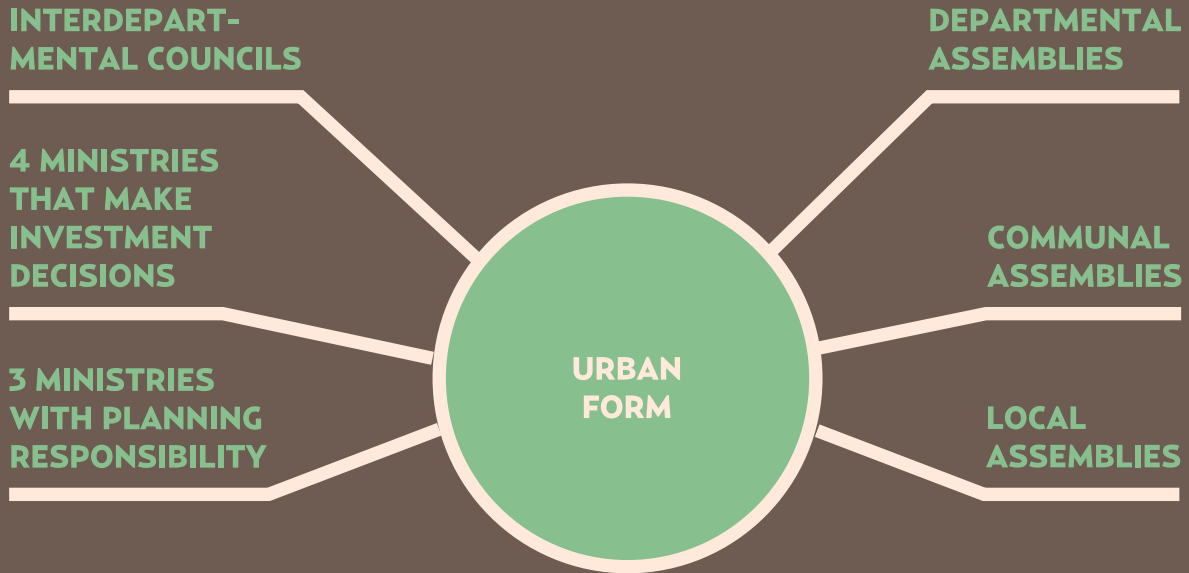
Local governments are also important actors in urban development. The constitution of Haiti defines the country as having “a decentralized form of government” organized along three layers (Constitution of Haiti, 1987). There are 570 “communal sections,” the smallest political subdivision. They are distributed across 146 municipalities (communes), the intermediate level of local

government. The municipalities are then organized into 42 arrondissements, which, in groups of three to seven, finally composed 10 departments. In theory, municipalities have a share of the responsibility for urban planning activities, such as the provision of water and sanitation services. For further details on the roles and responsibilities of these municipalities, arrondissements, and departments, please see Chapter 4.

In practice, there is a gap between the structure on paper and the day-to-day functioning of government. Across the world, the daily functioning of government is shaped by both written and unwritten rules.

Figure 4.

THERE ARE MANY GOVERNMENTAL BODIES WITH RESPONSIBILITY FOR URBAN PLANNING AND DEVELOPMENT



Source: Authors' elaboration

Unwritten rules, bargaining, and power dynamics between interested actors all have important impact on how activities take place in practice (World Development Report 2017). Although there is a lack of research that rigorously documents these dynamics in Haiti, there is evidence of duplication and ambiguity over responsibility for urban planning decisions and implementation. For example, it can be seen in the uncertainty over the allocation of funds to support urban planning activities such as basic service provision. Thus, in the case of water provision, legal responsibility is divided in an unclear and overlapping manner between national, departmental, and communal bodies; while unpredictable financial flows (both in terms of quantity and timing) mean

that local bodies are unable to fulfill responsibilities in practice. This is discussed in greater depth in Chapter 4.

In recent years the government has undertaken a number of initiatives to promote decentralization, which can help improve accountability by bringing service delivery responsibilities closer to the population that benefits from it. The Strategic Development Plan of Haiti emphasizes the importance of territorial reform to achieving the country's development objectives, and there is a national-level commitment to decentralization through the establishment of regional and local government offices. Important efforts in technical assistance for capacity building and public investments have taken place in line with this vision. The plan also outlines a

vision of regional growth pole development, which is expected to help counterbalance the political and economic dominance of Port-au-Prince. Other notable developments include the election of mayors for all municipalities across the country in 2016, for the first time in ten years. Nonetheless, many challenges remain. Municipal capacity varies substantially, even between municipalities within the larger metropolitan areas. Constraints include human resource limitations in the form of insufficient number of qualified staff and municipal revenue. Efforts to devolve power to local authority remain incomplete, and only about half of the funds designated for communes are transferred in practice (see Chapter 4 for further details).

Important efforts have also been undertaken to help guide decision making across different levels and sectors of government through the development of strategic plans. Plans play a vital role in resilient urbanization, since they can provide a framework to leverage the value of investments by integrating development objectives across sectors and different levels of government. The Government of Haiti has taken considerable efforts to establish effective and coordinated decision-making processes in recent years. One key element of this has been the development of national, sectoral, and local plans. As indicated in Annex 4, this includes a national development plan and comprehensive policies for the housing, water and sanitation, and disaster risk management sectors. As also indicated in the annex, there have been almost a dozen efforts to develop an effective master plan for Port-au-Prince and Cap-Haïtien in recent years.²²

²² This includes UN Habitat supported forums in 2011 (which included consultations with 600 representatives of the private sector, civil society, academics and professionals of architecture and planning, community leaders, and also local and municipal technicians) and the 2014 First National Urban Forum.

These plans help to fill an important information gap, but implementation remains a challenge. There are two major constraints to the effectiveness of these plans in shaping the development of Haiti's urban areas in practice. First, many planning instruments exist in the law but are not implemented in practice. For example, the law on 'organisation de la Collectivité territoriale de Section Communale' of 1996 and the 'Décret portant sur l'organisation et le fonctionnement des Sections Communales' of February 2006 specify a number of instruments that have rarely been used (see Annex 3 for further details). Secondly, where plans are developed, there remains a challenging gap between the expectations set by the plans and the financial and technical capacity to implement their recommendations in practice. There remains lack of clarity over the division of responsibilities across different levels of government, uncertainty over financing for activities, and some confusion over the legal status of plans.

Effective plans must be backed up by the capacity to guide the behavior of households, firms, and other government actors to abide by the plan. Haiti is not alone in grappling with this challenge. Across Sub-Saharan Africa, for example, many cities have detailed plans that set high standards for urban development. These master plans are expensive to produce, requiring months, if not years, of conscientious work. Many, however, have little impact, as they set planning ambitions that are difficult to enforce. Where they set excessively high standards for development, they

are linked to rising informality and reduced overall investment in urban development (Lall, Henderson, and Venables 2017). Global experience shows that plans alone cannot guide urban development effectively; institutional capacity is needed to ensure that coordination and cooperation across agencies takes place in practice. In the following section, we therefore turn to policy tools that can help empower local actors and strengthen coordination across the many different sectors of government, to improve capacity for resilient urban planning.

INSTRUMENTS THAT CAN HELP INITIATE CHANGE TODAY, WITH AN EYE ON BUILDING STEPPING STONES FOR TOMORROW

The previous analysis has shown that Haitian cities face a number of challenges. Urban areas are crowded, rather than dense; they are growing in an uncoordinated manner, with insufficient regard for risks; and are hampered by lack of clear, authoritative, and accessible property rights. What can be done to ensure a brighter future for Haiti? Cases from around the world point to specific initiatives that can address each of these challenges. Ultimately, however, sustainable improvements will require improved institutional capacity for resilient planning and effective delivery of services. This is a long-term agenda, but steps can be taken today to build strong roots for future transformation.

Policymakers have several tools at their disposal to address the urgent challenges of today, while also progressively strength-

ening capacity for resilient planning in the future. In the following section, we discuss a number of policy actions that can help address a pressing urban challenge and also help stimulate a virtuous cycle of institutional strengthening. The actions outlined below draw on tools to help consolidate key institutional features that distinguish fragile and violent situations from stable development environments, such as: confidence building and bottom-up support for state-society engagement, which is vital to ensure that key actors will collaborate in collective action; initiatives that leverage transparency of information to stem illegal financial flows and strengthen accountability; and institutional strengthening in priority areas of justice and security.²³

The following recommendations have been sequenced in light of the need to address urgent short-term challenges and build momentum for vital long-term improvements in resilient urban planning and service delivery capacity. The first set of policies are those that can help nudge urban growth away from crowding and towards the kind of density that can help a city thrive. Specifically, different approaches to meet current basic service needs and build resilience, through measures that help address current challenges associated with the absence of effective planning in the past. These may be termed “corrective” measures to address basic service deficits and vulnerability to hazards. The second group are efforts that leverage information as a tool to improve land use management; these

²³ The initiatives discussed below are aligned with recommendations from the World Development Report on Conflict and Development (2011), as well as the World Development Report on Governance and the Law (2017) on reinforcing governance (World Bank 2017a).

are examples of cases in which new sources of information are used to help coordinate decision making across different government departments and to build support for reforms among urban citizens. These may be understood as more “preventive” measures to help guide the pattern of future growth. Finally, specific institutional strengthening initiatives are highlighted.

In the short term, invest to address basic service deficits

Basic urban services such as water, waste collection, and maintenance of order in public spaces are the front-line of citizen interaction with the state. These services are spaces in which the state is most visible (Denney et al. 2015; Jones and Howarth 2012). They can be a visible testimony to the presence and effectiveness of government. Studies from a number of post-conflict countries have found that there is a strong statistical relationship between participation and perceptions of government.²⁴ Participation is linked to improved trust between citizens and the state, and among citizens themselves, and as such may have implications for long-term sustainability of urban development. Indeed,

in conflict-affected and fragile states, service improvements can send a strong signal of change, help build confidence in government, and extend the reach of the state into urban areas, and thus form part of a positive cycle of improved governance and stability (World Bank 2011b, p131-2).

Continue to empower communities and strengthen local government through basic service initiatives

Community engagement and empowerment is vital to successfully upgrade access to services in areas where development has already taken place in an unregulated manner. Upgrading existing unplanned areas presents a number of challenges: these are technically complex projects that require area-specific knowledge, as well as ingenuity and patience (Arnold 2015). Haiti has almost ten years of experience implementing Community Driven Development (CDD) projects.²⁵ Overall, this record testifies to the potential of CDD as a tool address urgent needs by empowering communities. Reconstruction activities such as the Port-au-Prince Neighborhood Housing Reconstruction Project *PREKAD*²⁶

²⁴ Research from Nepal, Pakistan, Sri Lanka, Uganda and Sierra Leone have found that users opinion and trust in government is linked to user experiences of services, and suggest that poor performance can be a driver of grievances. Indeed, findings suggest that the relationship between participation and perception of government may be more important than the quality of service delivery itself (Denney et al. 2015).

²⁵ CDD is “an umbrella term for projects that actively include beneficiaries in their design and management” (Mansuri and Rao 2004). The objective is to ensure that local people have agency and voice in addressing local problems by working in partnership with government and other organizations in the design and implementation of development projects. It operates on the principles of transparency, participation, local empowerment, demand-responsiveness, greater downward accountability, and enhanced local capacity (World Bank, online).

²⁶ PREKAD is a USD 65 million project supported by the Haiti Reconstruction Fund implemented between 2011 and 2016. The objective of the project was to help earthquake-affected residents of selected Port-au-Prince neighborhoods to repair and/or reconstruct their houses and/or return to improved housing conditions and improving basic community service infrastructure. The project included debris removal, housing repair and reconstruction components, as well as community service infrastructure repair/improvement, and support for capacity building.

and the Haiti Urban Community Driven Development Project *PRODEPUR*²⁷ projects in particular have demonstrated the potential of CDD to support housing reconstruction and improvements in basic community service infrastructure. In addition to this, experience has shown that delivery of services such as access to water and solid waste management are central to conflict resolution in communities defined by complex territorial groups or “Bases.”²⁸

There is room to do more: through careful design, the benefits of CDD can be further leveraged. Emerging global best practices suggest that there are specific challenges with community engagement in urban areas, and thus room to further improve the design of CDD projects in cities.²⁹ Specifically, three key elements can be strengthened in order to leverage the full potential of CDD in Haiti.

Firstly, refine facilitation of community engagement. The size of the target community is typically larger in urban areas than in rural areas and the population is often more heterogeneous. It is also often more challenging to encourage engagement in projects, as people living in cities tend to value time for wage-earning jobs more than their rural counterparts, and they may have a less strong sense of local “community” (Arnold 2015). In addition to this, in contexts where violence and criminal activity is prevalent, there can be specific challenges to facilitating

community engagement. Overall, experience in the Haitian urban context has demonstrated that CDD can be the entry point for community-based crime and violence prevention activities, as communities can be mobilized around small-scale infrastructure provision. Careful facilitation of this engagement is key (World Bank 2013a). It may be necessary to ensure that the design of projects includes efforts to ensure that gang members are aware of the project activities to prevent interference in the implementation process. Furthermore, facilitation may need to balance concerns that the presence of criminal actors may create barriers to other specific groups of community members – such as women – attending meetings (Arnold 2015). As such, project design should reflect the principle of building “inclusive-enough” coalitions.³⁰

Secondly, ensure that projects are better integrated with local government processes and help to build the accountability of institutions to deliver the services over time. In the context where local government capacity is weak, CDD projects often need to rely on civil society organizations to mobilize and support community engagement (Arnold 2015). Yet local authorities have a vital role to play in creating a permissive environment for community projects to succeed. Past experience of NGOs in Haiti has found that even the lack of explicit formal approval from government can constrain community engagement

²⁷ PRODEPUR is an urban community-driven development project whose objective is to improve access and satisfaction with basic and social infrastructure and services, and income-generating opportunities for residents of targeted disadvantaged urban areas.

²⁸ Bases combine local leadership, political affiliation, cultural expression, and criminal activity.

²⁹ As stressed in a recent effort to compile lessons learned from CDD projects in seven different countries (Indonesia, Vietnam, Benin, Morocco, Kyrgyz Republic, Tanzania, and Haiti), most CDD projects across the world have been implemented in rural areas and thus the literature on urban CDDs is still in its infancy.

³⁰ The WDR 2100 defines “inclusive-enough” coalitions as those that include the parties necessary for implementing the initial stages of confidence-building and institutional transformation; but they do not need to be “all-inclusive” (p12).

and willingness to act (Pelling 2011). Furthermore, as current experience in Haiti indicates, the long-term sustainability of the projects can benefit from improved engagement of local government. Recent assessments of PREKAD and PRODEPUR projects noted that investments could have been better linked to local development plans, and that there is a need to secure long-term commitment for operation and maintenance of the services from relevant local government authorities. Indeed, as discussed in Chapter 4, in these projects and other cases where local governments partner with NGOs and cities in other countries, the programs have relied on delegated implementation rather than strengthening local government delivery capacity.

CDD approaches can help build local government capacity, if they are designed to support local governments to take responsibility for service provision in the medium term. CDD projects are often designed to build capacity among local community implementation teams to conduct activities such as procurement, as well as to establish processes that deter fraud and corruption. These include transparency of budgeting, internal and external third party monitoring, and establishment of grievance redress mechanisms. Similar tools can be built into CDD projects to help strengthen local government engagement and performance (World Bank online). Looking ahead, it will be important that CDD projects are designed to support eventual increased responsibility and effective delivery of services by municipalities.

Thirdly, because benefits and costs spill across administrative boundaries, coordination is key to maximize the positive impacts of interventions. CDD projects that

aim to address social exclusion often need to be designed to stretch across administrative boundaries in urban areas. Those that focus on specific settlements such as “slum upgrading,” need to carefully weigh how the intervention may impact different groups, such as renters, who may not actively engage in the project but could be harmed by price effects associated with infrastructure improvement. CDD project design must be flexible, as social dynamics that regulate community engagement are likely to differ across city center, peri-urban areas, and small towns, and even to be impacted by specific events or shocks such as natural disasters (Arnold 2015).

Build on what works to consolidate basic service delivery

Improvements in basic services can be regarded as a ladder, whereby each successful modernization effort also builds capacity, which in turn makes it viable to undertake new, more advanced, initiatives led directly by local governments. Improving basic service management and delivery requires a comprehensive effort to reform organizational structure, build capacity in local governments, and raise awareness. Attempts to plug leaking services with piecemeal interventions risks trapping Haitian cities in a low-level equilibrium of poor services and high costs. Yet it is unrealistic to expect that complex and large-scale reform can be done all at once. As such, it is important to prioritize short-term initiatives that are linked to long-term gains in the resilience and quality of services.

The Government of Haiti (GoH), through the Ministry of Interior and Local Authorities (MICT), has made important progress

in pushing the decentralization reform by directly empowering municipalities and developing various local support initiatives.³¹ As opposed to channeling funds through community-based organizations to respond to basic service delivery needs, the GoH is directly empowering municipalities to finance and operate local investments in accordance with local and sectorial development plans. Nevertheless, the participatory approaches utilized in previously implemented CDD projects remain relevant to ensure community participation, transparency, and accountability.

Programs that encourage good performance on service delivery by providing grants or financing based on results or outputs can improve service provision in the short term and contribute to building capacity in the long term. National governments can use their transfer systems to provide financial resources to municipalities in the form of grants or other transfers to execute their duties and provide basic services provided they meet performance criteria reviewed annually. When these projects are framed in terms of broader programmatic objectives, they can effectively tackle immediate challenges while building capacity for the longer term. Solid waste services can provide a good example where service performance-incentivized improvements can both help to address service deficits and contribute to local government

strengthening. For example, the Jamaica Social Investment Fund (JSIF) provides community groups results-based support to maintain a clean community; environmental wardens have been established to enforce local littering and ensure maintenance of the community; and training opportunities with the goal of improving community participation and pride and the sense of security in urban spaces.

For municipalities that are taking on management services for the first time, initial objectives could concentrate on building the basis for service provision. These could include, for example, procedures to plan service delivery in line with budget plans and execution, manage procurement processes, and communicate effectively with citizens, as well as key skills related to infrastructure planning and operations and maintenance systems. One example of such an initiative is the “Proyecto de Desarrollo Municipal” (PRODEM) project in the Dominican Republic. This project worked with small municipalities (populations between 2,000 and 50,000 people) in the three poorest provinces of the country. The project provides comprehensive capacity building, including reorganization of staff, financial management training and software, creation of municipal development plans, infrastructure planning, participatory budgeting, and transparency and reorganization and optimization of basic

³¹ Local development support programs are coordinated by Ministry of Interior and Local Authorities (MICT). Recent municipal development activities build on two flagship initiatives from MICT in the Nord and Nord-Est départements of the country, the Programme d’Intervention Nord /Nord-Est (PINNE), which aims at strengthening municipal administrative structures, and the Appui à la Gouvernance et à l’Investissement Local en Haiti (AGIL) funded by the European Union in sixteen municipalities in the Nord and Nord-Est départements. The AGIL aims to empower municipalities in managing resources for local service delivery. Lokal + is a USAID-funded project that supports local governance and decentralization in Haiti, including revenue collection support.

³² The approach was successful in 28 of the 31 municipalities: they reached these three levels of performance and rewarded with a variety of works including parks, recreational facilities, cemeteries and fire stations (a total of 85 were constructed).

services. As a reward for reaching each of three defined levels of performance, the municipalities are provided a public worker to help them support their ability to execute their services.³²

In areas where some service structures are already in place, initiatives can be undertaken to help consolidate capacity and better leverage existing resources, such as output-based aid. Output-based aid uses performance-based subsidies to improve delivery of services in underserved areas, sectors, or households. Output-based aid ties the disbursement of public funding in the form of subsidies to the achievement of clearly specified results that directly support improved access to services, including improved water supply and sanitation and access to services such as energy, health care, education, solid waste management, and transportation. For example, in the Southern West Bank, subsidies are being paid to solid waste service providers in response to independently verified improvement in cleaning, collection and disposal services, and improved financial sustainability. The program improved the cost-recovery mechanisms with over 90 percent of the service providers achieving these outputs and receiving the corresponding subsidy. In Nepal, a similar project is under implementation that is expected to benefit 800,000 people in five participating municipalities.

In the medium term, leverage information to facilitate coordinated decision making

One way to guide decisions is by making relevant information available to households, firms, and different local governments. As

noted above, resilient planning is fundamentally about guiding the decisions taken by households, firms, and government, in order to minimize risk exposure and to ensure that the resulting urban form is supportive of broader development objectives. As the examples below highlight, the very act of making information public can be a tool to catalyze citizen engagement in collective action and build trust in government.

Disseminate risk-analysis insights to support informed decision making

Accurate, accessible information is needed to support non-structural measures for protecting people from risk. There have been important advances in understanding the risks that urban areas in Haiti face. Several knowledge tools were developed after the earthquake to inform reconstruction processes and strengthen DRM information necessary for planning. These include information on (i) hazards and risks (multi-hazard risk assessments, hazard atlas, and historical data on damages and losses from PDNAs), (ii) Seismic Zonation Mapping by MTPTC; (iii) location of exposed assets (georeferenced critical infrastructure like schools, hospitals, and roads); (iv) high-resolution satellite imagery and Lidar for the country; and (v) full diagnostic of the fiscal and economic impacts of disasters in Haiti.³³ Given the high level of exposure and vulnerability of Haitian cities to multiple natural hazards, it is an imperative to leverage this information to reduce risk through structural corrective measures

³³ For further details, see Analysis of Multiple Natural Hazards in Haiti (NATHAT) and the Guide Méthodologique Réduction des Risque Naturels en Zone Urbain en Haiti (Government of Haiti/UNDP [2015]). See also World Bank 2015b.

and land use planning preventive measures, as well as to improve disaster preparedness and response capacity of national and local authorities and urban communities.

Publicly available risk information can be used to support vital non-structural flood risk measures. These non-structural measures include: (i) emergency planning, such as the development of flood evacuation plans and alert systems; and (ii) information-based campaigns designed to encourage flood risk mitigating behavior, such as minimizing flood risk by keeping drains clear and adjusted solid waste management practices (Jha et al. 2012). Past experience in Haiti testifies to the effectiveness of such initiatives. In areas such as Camp Perrin, in Les Cayes *arrondissement*, civil protection initiatives proved to be lifesaving during Hurricane Matthew in 2016. Two months prior to the hurricane 100 families in the most at-risk neighborhoods took part in a disaster simulation exercise, and it is notable that these families were all kept safe during the real-life devastation of the hurricane that followed (UNDP 2016a). Furthermore, the civil protection volunteer group (brigadiers) sprang into action ahead of the disaster – spreading information about the storm and preparing evacuation centers – as well as in the immediate aftermath by clearing access to hospitals (UNDP 2016b). There is room to replicate this experience in urban areas more broadly. Technological innovation is providing new opportunities to engage citizens and disseminate information on risks. In Haiti and in other countries across the world, Unmanned Aerial Vehicles (UAVs or drones) are increasingly being employed to provide information on disaster risks.

The cost of mapping by drones is much lower than aerial photography and can bring additional benefits. Drones fly at around 100 meters above the ground and always within contact by remote control. They are thus not affected by cloud cover and can be deployed even in the immediate aftermath of natural disasters to assess damage, as was demonstrated in Haiti in the aftermath of Hurricane Matthew. Beyond data collection, it is important to note that the introduction of this new technology can also present an opportunity to engage local officials and citizens on risks. Specifically, it is important to leverage opportunities for data sharing, as the technology creates new avenues to communicate the information collected, which can in turn be a catalyst for behavior change.

In Tanzania, drones were used to map flood plains in Dar es Salaam, the country's largest city. The information was used to plan and predict how water will move in the event of a flood. A team of local researchers, local government officials, and land surveyors were trained in the use of the new technology. This training can be completed within a period of one or two weeks. In addition to this, over the course of the project, it became clear that the excitement generated by the new technology helped to build communication and engagement between local government and communities in the mapped hazard areas. Maps can be printed out for discussion with the community, the information can be updated simultaneously on a computer, and the corrected final product can then be reprinted for verification before being incorporated into land records. As a result of these positive initial experiences,

a much larger-scale project is underway to use drones for cadastral mapping in the island of Zanzibar.³⁴

Use information to align incentives: aim for the best but prepare for the worst

Basic infrastructure investment is urgent and costly. There are economies of scale in urban service provision: the cost of providing piped water in cities is estimated to be about three times lower per capita than in sparsely populated areas.³⁵ But it can be much more expensive and complicated to provide basic services to unplanned areas than it is to put in place trunk infrastructure ahead of development. By some estimates, investing in basic service infrastructure ahead of development is two to three times cheaper than “slum upgrading” (Akibo 2007), and every dollar spent on disaster risk mitigation saves society four dollars (Multihazard Mitigations Council, 2005). Planning ahead can help save financial resources.

Yet how can governments effectively plan ahead without the financial or institutional capacity to fully implement plans? As discussed above, urban plans can be an effective tool to anticipate urban growth and infrastructure needs. Many important efforts to develop plans have been undertaken in Haiti in recent years. There is, however, a discrepancy between the visions set out in the plans and the reality on the ground. One major constraint to effective use of plans is that local actors have neither the funds nor

the incentives to implement the decisions. Yet compliance can also be encouraged another way: by making clear and credible information available to households.

Simple plans – that are disseminated – can be highly effective in guiding new development. One example of this is the approach used in Tunis, Tunisia. By making vital information widely available to households, the local government was able to guide their choices. This approach aims for the best, but prepares for the worst (acknowledging that its vision for urban development faces short-term financial constraints). Rather than trying to restrict urban expansion into unplanned areas, the government instead decided to provide clear and transparent information to the public on the future infrastructure expansion plans. Households, who are settling in what today are unplanned and unserved areas, can use this information to make sure that rights of way are left clear for this future investment. This benefits the government by reducing the costs of investment, but it also benefits the households, as they are less likely to be adversely affected by future interventions.

The example of Tunis shows that by disseminating information on future public investment, public authorities can help guide urban expansion. This simple regulation can reduce infrastructure investment costs in the long term and helps maintain the presence and capacity of the state in areas of urban expansion. In addition to this, given

³⁴There are important considerations around the use of new technology such as drones that need to be carefully considered. For one, few countries have established a functioning regulatory framework to govern the use of drones. The imagery produced by drones has a resolution of around three centimetres per pixel, which is sufficiently high resolution that potential privacy issues should be carefully considered. For further details on this project, see World Bank (2016a; 2016b).

³⁵The price is approximately USD 0.70 to USD 0.80 per cubic meter to provide piped water in urban areas, versus USD 2 in sparsely populated areas.

that much of the land around Haitian cities is prone to natural disasters, it can also be a good opportunity to guide urban development to be more resilient. Specifically, the government can use hazard risk maps not only to inform decisions about the location of future infrastructure, but also to communicate information about risks with the public. There is thus the opportunity not only to save costs by preserving rights of way for infrastructure investment, but also to help reduce exposure to hazard by ensuring that risk information is reflected in both public and private investment decisions.

Integrate flood risk knowledge into transparent urban infrastructure investment decision making

Important win-wins could be achieved by integrating flood risk management information with the northern-corridor development objectives in Haiti. As recent planning efforts highlight, the North and Northeast areas of the country are marked by population growth pressure, deficits of basic services and transportation infrastructure, and significant flood risks (World Bank 2017b). The costs of “doing nothing” in this area are high: continued development in this line will lead to increasing numbers of people at risk of floods, as well as growing environmental pressures. Case studies from around the world indicate that real gains can be attained by leveraging information on flood risks to guide coordinated, integrated action to build resilient and sustainable cities.

One successful example of this comes from the municipality of Sao Bernardo do Campo,

in Brazil. Sao Bernardo is one of 39 municipalities that make up the Sao Paulo Metropolitan Region. The municipality is located next to the Billings Reservoir of the Alto Tiete watershed, and it has experienced rapid and informal population growth of largely poor and marginalized communities along the water’s edge. This pattern of growth has presented the municipality with many serious challenges. For one, the Billings Reservoir is the primary source of water for nearly 5 million people and a constitutive part of a wider watershed system that supplies 70 percent of the vast metropolitan region’s 20 million inhabitants. Informal population growth has been associated with a rapid decline in the quality of the water, as untreated sewage, solid waste, and storm water runoff have increasingly polluted the reservoir. For another, the ground has become increasingly impermeable and subject to flooding.

A careful program of data collection and community engagement created the opportunity for coordinated action on flooding and build coalitions for collective action. The municipality of Sao Bernardo started by identifying at-risk informal settlements, located in fragile watershed areas (World Bank 2013b).³⁶ Armed with empirical evidence on social, environmental, and economic conditions in these settlements, the municipality was able to establish a system of prioritizing investments that met both the utility company’s concerns over water quality in the watershed and local residents’ needs for improved services. Investments in new sewage network connections, storm water drainage infrastructure, and public transportation services were combined

³⁶The municipality identified 261 precarious and informal settlements, of which 151 were in the environmentally fragile watershed area, and 65 were considered to be at high risk of natural disasters. They developed a transparent system of prioritization based on a combination of social, environmental, and financial considerations to identify 52 settlements for intervention.

with public meetings and information dissemination in schools to encourage environmental behavior change. New parks were created to serve the tripartite purpose of providing “green areas” to absorb storm water, a buffer between urban growth and the reservoir, and public space with amenities for outdoor activities and promotion of social inclusion. All the information was made public through a custom-made online mapping system,³⁷ which municipal authorities believe helped build trust in the government in marginalized communities. Furthermore, it is likely that this focused project has spillover benefits: by helping to build institutional experience of integrating workflows across different government authorities, it provides the foundation for future integrated policy development in other sectors and areas.

In the long term, strengthen property rights and promote institutional reform for improved governance

The government of Haiti has made commitments to long-term projects that can fundamentally improve resilient urban planning, such as reforming property rights and decentralization. These are important and challenging commitments. Progress should be contextualized in the broader effort toward institutional transformation in Haiti, which has included, inter alia, reforms to the justice, electoral, revenue collection, and anti-crime sectors (World Bank 2011b). Decisions over the pace, focus, and sequencing of institutional reform

efforts must be carefully sequenced and prioritized, since – as Haitian reformers experienced in the early 2000s – too much institutional reform, too quickly, can overtax and undermine appetite for change (World Bank 2011b, p145).

Strengthen property rights with dispute-resolution mechanisms

The establishment of a single authoritative, transparent, accessible, and accurate record of land ownership is vital for resilient urban development. The lack of transparent land ownership records leads to inefficiencies in basic service investment, opens avenues for debilitating corruption, and makes the urban poor vulnerable to eviction. In addition to this, clear land records are needed to effectively integrate risks maps and other knowledge on DRM information – such as insurance coverage levels, exposed values of assets, information on the impact of former disasters – into effective land use planning and disaster risk management.

The establishment of a working cadastre is, however, a long-term project: past experience in Haiti, and comparable experience from around the world, highlight that there are many challenges to cadastral reform. For the new system to be successful, the records must be accurate, legitimate, and easily accessible. Sound expectation and management of costs is also important, as cadastres are expensive to establish and maintain.³⁸ Furthermore, there are specific challenges to transforming institutions in fragile and conflict-affected

³⁷This system is known as “HABISP” (<http://sihisb.saobernardo.sp.gov.br>).

³⁸The “one-off” cost of establishing a cadastre are often borne by public finances. In many countries, the running costs – including updating records – are covered through user fees (Hawerk, online). It is important to consider how cost-recovery models may affect accessibility and perceptions over the transparency of the cadastre.

states.³⁹ Indeed, property rights reform and titling initiatives can in themselves become a source of conflict; they can even result in increased vulnerability among the urban poor by introducing new procedures that they are disadvantaged to navigate (DFID 2002; Payne, Durand-Lasserve, and Rakodi 2009).⁴⁰ One approach may be to prioritize improvements to titling and registration of plots for new housing development in order to lower costs (Hoek-Smit 2013).

Sequencing matters: effective dispute-resolution mechanisms are a key foundation for broader reforms. At present, Haitian courts are burdened with a backlog of unresolved property rights disputes. These disputes may intensify with efforts to reform land tenure and indeed in the creation of an official registry of land; it is therefore important that conflict- and dispute-resolution mechanisms are strengthened. Alternative Dispute Resolution (ADR) mechanisms can be useful in helping to reduce the pressure on courts, resolve conflicts effectively, and even help build confidence in formal land property

processes. ADR is a method that can vary from facilitated direct negotiations between two interested parties to efforts that more closely resemble courtroom processes, and it has been adopted for a wide range of contexts, from the Democratic Republic of Congo to Chile (Herrera and da Passano 2006; UN Habitat 2012; UN Habitat 2013; and Vlassenroot 2012).⁴¹ In some cases, it relies on local leaders with high levels of social recognition, who, as research from Mali and Kenya suggests, may be regarded as better placed to solve land disputes than the official court systems (World Bank 2011b, p155).

For Haiti's largest cities, build frameworks for municipal cooperation

The footprint of urban economic activity is often much wider than traditional administrative boundaries. As highlighted in Spotlight 2, Haitian urban areas are expanding into larger agglomerations. As Haiti continues in the process toward political and fiscal decentralization, it will be important to consider that coordina-

³⁹The WDR 2011 defines institutional transformation as “[d]eveloping over time ‘rules of the game’ that increase resilience to risks of violence, including laws, organizations, norms of behaviour, and shared beliefs that ensure that the benefits from individuals choosing to act peacefully and lawfully exceed the costs.”

⁴⁰The national housing plan of 2013 notes that the state will adopt a real estate policy that supports equitable and fair property rights, including land use tenure. To date there have been a number of pilot projects to this end, including a USAID-funded pilot project to map 10,000 plots in the Port-au-Prince neighborhoods of Delmas 32 and Carrefour-Feuille (USAID 2016). This initiative aims to record information on land tenure and housing ownership. Habitat for Humanity created the Haiti Property Law Working Group in 2011 focused on “longstanding land tenure issues.”

⁴¹In Congo, the process for land conflict resolution mediation is composed of ten main steps: 1) request for mediation from the land mediator; 2) analysis of the context, scope, object, and causes of the conflict; 3) invitation of parties, witnesses, or resource people (this invitation may be made directly or through an intermediary; 4) exchanges between the parties or witnesses; 5) review and analysis of facts to identify the implications of the conflict; 6) analysis of documents or components of the file/tenure certificate or title deeds; 7) listening to witnesses (chiefs, administrative authorities, neighbors or residents, etc.); 8) visits to the area to assess the conflict, to understand the respective claims of the parties; 9) exploration of possible solutions, assisting the parties to draft agreements and signing the arrangement; 10) collective monitoring and implementation of agreement (UN Habitat 2012; UN Habitat 2013; and Vlassenroot 2012).

tion across these adjacent municipalities is often beneficial. Job growth in one municipality is likely to attract workers from a wide catchment area and rely on transporting inputs and outputs across large distances. No municipality can single-handedly support these processes and manage the associated challenges, such as pollution and congestion. As discussed in Chapter 4, in the context of limited financial resources, creation of new local entities may lead to increased strains in resources. Yet without coordination, it is likely there will be wasteful duplication of activities or policies may be undermined because they are contradicted by policy choices of neighbors (Samad, Lozano-Gracia, and Panman 2012). As such, it is important to consider how coordination across existing municipal boundaries can be facilitated.

A number of initiatives are currently underway to encourage coordination across municipal and even departmental boundaries, focusing on waste services.⁴² Yet, without strong institutional frameworks in place to promote cooperation, these efforts face many challenges. Indeed, international experience suggests that countries that have been successful in establishing multiple shared facilities have done so within a national framework to facilitate cooperative agreements. There are multiple ways to develop such a framework. In some Latin American countries, access to finance is the main incentive (Argentina and Brazil), while others have established legal mandates for

regional or national authorities to provide disposal (Peru). In the case of Colombia, the framework leverages the financial incentives provided by direct disposal facilities while regulating the nature of disposal services to ensure jurisdictional boundaries do not limit the access to service. As Haiti moves toward implementing decentralization objectives, it will be important to learn from these experiences and develop an effective means of incentivizing coordination for service delivery.

⁴² In the metropolitan region of Cap-Haïtien, the Association Intercommunale de Traitement des Ordures Ménagères Le Marien was created. This association includes the Cap-Haïtien, Quartier Morin, and Limonade municipalities, which are located in two separate departments (North and Northeast). The association is financed by AGIL and the AFD. Similarly, efforts are underway to forge cooperation between the municipalities of Caracol, Trou du Nord, Terrier Rouge, and Limonade (financed by IADB).

REFERENCES

- Abiko, A., L.R. de Azevedo Cardoso, R. Rinaldelli, and H.C.R. Haga. 2007. Basic costs of slum upgrading in Brazil. *Global Urban Development Magazine*, 3(1).
- Ambraseys, N., and R. Bilham. 2011. Corruption Kills. *Nature* 469: 153-155.
- Amnesty International. 2015. "Ten Facts About Haiti's Housing Crisis," from <https://www.amnesty.org/en/latest/news/2015/01/ten-facts-about-haiti-s-housing-crisis/>
- Arnold, M. 2015. *World - Participatory and Community Driven Development in Urban Areas*. Washington, DC: World Bank.
- Davis, M., and A. Rappaport. 2014. Air Quality in Developing World Disaster and Conflict Zones - The Case of Post-Earthquake Haiti. *Science of the Total Environment* 496: 22-25.
- DFID. 2002. *Better Livelihoods for Poor People: The Role of Land Policy*. Consultation Draft.
- de Waal, A. 2009. Why Humanitarian Organizations Need to Tackle Land Issues. In S. Pantulizano (Ed.), *Unchartered Territory: Land, Conflict and Humanitarian Action*. Warwickshire, UK: Practical Action Publishing.
- Denney, L., R. Mallett, and D. Mazurana. 2015. Thematic Paper on Peacebuilding and Service Delivery. United Nations University.
- Etienne, H. F. 2012. "Land Rights, Land Tenure, and Urban Recovery: Rebuilding Post-Earthquake Port-au-Prince and Léogâne," Oxfam America Research Backgrounder series.
- Ferreira, S. (2013, January 26). Haiti's road to reconstruction blocked by land tenure disputes. *Reuters*. Retrieved from <http://www.reuters.com/article/us-haiti-land-idUSBRE9oPoBM20130126>
- Fuller, J. A., T. Clasen, M. Heijnen, and J.N. Eisenberg. 2014. "Shared sanitation and the prevalence of diarrhea in young children: evidence from 51 countries, 2001-2011." *The American journal of tropical medicine and hygiene*, 91(1), 173-180.
- GFDRR. 2011. Turkish Catastrophe Insurance Pool: Providing Affordable Earthquake Risk Insurance, from http://www.gfdrr.org/sites/gfdrr.org/files/documents/DFI_TCIP_Jan11.pdf
- Government of Haiti. 2013. Politique Nationale du Logement et de l'Habitat (PNLH)
- . (2010). Analysis of Multiple Natural Hazards in Haiti (NATHAT)
- Government of Haiti/UNDP. 2015. Guide méthodologique Réduction des Risque Naturels en Zone Urbain en Haiti.
- Graham, J. P., and M.L. Polizzotto. 2013. Pit latrines and their impacts on ground-water quality: a systematic review. *Environmental health perspectives*, 121.
- Hawerk, W. Cadastral Systems in Developing Countries - Technical Options, from <https://www.fig.net/organisation/comm/7/activities/reports/events/penang97/penang9710.htm>
- Heijnen, M., O. Cumming, R. Peletz, G. Ka-Seen Chan, J. Brown, K. Baker, and T. Clasen. 2014. Shared sanitation versus individual household latrines: a systematic review of health outcomes. *PLoS One*, 9(4).
- Herrera, A., and M.G. da Passano. 2006. Land Tenure Alternative Conflict Management. FAO Land Tenure Manuals 2,

- Rome, FAO.
- Hoek-Smit, M. 2013. Options for Expanding Access to Housing Finance in Haiti. Discussion Note.
- Hoornweg, D., and P. Bhada-Tata. 2012. What a Waste: A Global Review of Solid Waste Management. Urban Development Series; Knowledge Papers No. 15, World Bank, Washington, DC.
- IMF. 2015. Haiti - Selected Issues, IMF Country Report, May 2015
- 2014. Poverty Reduction Strategy Paper.
- International Housing Coalition. 2011. *Haiti Shelter Sector Assessment: One Year After the Earthquake*. International Housing Coalition: Washington D.C.
- Jha, A. K., R. Bloch, and J. Lamond. 2012. *Cities and flooding: a guide to integrated urban flood risk management for the 21st century*. World Bank Publications.
- Jones, S., and S. Howarth. 2012. "Supporting Infrastructure Development in Fragile and Conflict-Affected States: Learning from Experience," UKAID Report.
- Katz, J. M. (2014, March 12). "Haiti's shadow sanitation system." *The New Yorker*.
- Klose, C. 2011. Evidence for Higher Tropical Storm Risks in Haiti Due to Increasing Population Density in Hazard Prone Urban Areas. *Environmental Research Letters* 6(4):1-4.
- Lall, S.V., J.V. Henderson, and A.J. Venables. 2017. *Africa's Cities: Opening Doors to the World*. Washington, DC: World Bank.
- Lherisson, G. 2015. Principes, règlements & outils opérationnels de la législation haïtienne sur le développement urbain, Port au Prince.
- Mansuri, G., and V. Rao. (2004). Community-Based and Driven Development: A Critical Review. *The World Bank Research Observer* 19(1): 1-39.
- Multihazard Mitigations Council (MMC). 2005. Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities. Volume 1 - Findings, Conclusions and Recommendations.
- OAS (2010). *Foncier Haiti: Modernization of Cadastre and Land Rights Infrastructure in Haiti. An Inclusive Approach*.
- Oriol, M., B. Jacquet, and A. Touati. Implementation challenges of land administration in rural areas of Haiti: from the elaboration of a pre-cadaster methodology to the land tenure reform. Paper prepared for 2016 World Bank Conference on Land and Poverty. World Bank. Washington, DC, March 20-24, 2016
- Payne, G., A. Durand-Lasserve, and C. Rakodi. 2009. The Limits of Land Titling and Home Ownership" *Environment and Urbanization* 21 (2): 443-62.
- Pelling, M. 2011. Urban Governance and Disaster Risk Reduction in the Caribbean: The Experiences of Oxfam GB. *Environment & Urbanization* 23(2).
- Samad, T., N. Lozano-Gracia, and A. Panman. 2012. *Colombia Urbanization Review: Amplifying the Gains from the Urban Transition. Directions in Development*. Washington, DC: World Bank.
- Singh, R. J., and M.A. Barton-Dock. 2015. Haiti - *Toward a new narrative: systematic country diagnostic*. Washington, DC: World Bank.
- Solid Waste Association of North America (SWANA). 2010. "Municipal Solid Waste Collection Needs in Port-au-Prince, Haiti" Position Paper.
- Tarter, A.M., K.K. Freeman, K. Sanders.

2016. *A History of Landscape-level Land Management Efforts in Haiti Lessons Learned from Case Studies Spanning Eight Decades*. Washington, DC: World Bank.
- Tilmans, S., K. Russel, R. Sklar, L. Page, S. Kramer, and J. Davis. 2015. Container-Based Sanitation: Assessing Costs and Effectiveness of Excreta Management in Cap-Haïtien, Haiti. *Environment & Urbanization* 27(1): 89-104.
- UNDP. 2016a. "Haiti Civil Protection Volunteers Put Others First," from <http://stories.undp.org/haiti-civil-protection-volunteers-put-others-first>
- UNDP. 2016b. "Haiti Rising After the Storm," from <http://stories.undp.org/haiti-rising-after-the-storm>.
- UN Habitat. 2011. Blog: "Port-au-Prince hosts 'the city we want forum,'" from <http://mirror.unhabitat.org/content.asp?cid=10674&catid=153&>.
- . 2012. "Cap-Haïtien Urban Profile."
- . 2012. "Milot Urban Profile."
- . 2012. "Toolkit and Guidance for Preventing and Managing Land and Natural Resources Conflict."
- . 2013. *Guide to Land Mediation: Based on the Experience in the Eastern Democratic Republic of the Congo*, ISBN No. (Volume): 978-92-1-132559-1.
- USAID. 2016. "Haiti Housing & Settlements Fact Sheet."
- . 2010. *Land Tenure And Property Rights In Haiti The Importance Of Land Tenure And Property Rights Issues and Post-Earthquake Recovery In Haiti. Property Rights And Resource Governance Briefing Paper 6*.
- Vlassenroot, K. (Ed.). 2012. *Dealing with Land Issues and Conflict in Eastern Congo: Towards an Integrated and Participatory Approach*. Report on the seminar held in Brussels on 20-21 September 2012.
- WHO/PAHO. (31 July 2013). "Addressing Waste Management in Haiti," Online Blog.
- World Bank. 2010. *Haiti Earthquake PDNA: Assessment of damage, losses, general and sectoral needs*. Washington, DC: World Bank.
- . 2011. *Violence in the City: Understanding and Supporting Community Responses to Urban Violence*. Washington, DC: World Bank.
- . 2011b. *World Development Report 2011: Conflict, Security and Development*. Washington, DC: World Bank.
- . 2012. "Integrated Urban Water Management Case Study: Sao Paul." from <http://siteresources.worldbank.org/INTLAC/Resources/257803-1351801841279/SaoPauloCaseStudyENG.pdf>.
- . 2013. *Indonesia: Evaluation of the Urban Community Driven Development Program - Program Nasional Pemberdayaan Masyarakat Mandiri Perkotaan (PNPM-Urban)*.
- . 2013b. *Blue Water Green Cities International Workshop, December 4-6 2013, Sao Paulo, Presentations by Amauri Pollachi and Tassia Regina*, from <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/LACEXT/o,,contentMDK:23328153~pagePK:146736~piPK:146830~theSitePK:258554,00.html>.
- . 2014. "Haiti Conference on Clean Water, Improved Sanitation and Better Health." Working Paper.
- . 2015a. *Haiti Country Partnership Framework, FY 2016-2019*.

- . 8 January 2015b. “What Haiti Taught Us All.” World Bank Blog. <http://blogs.worldbank.org/latinamerica/what-haiti-taught-us-all>.
 - . 2016a. “Drones Offer Innovative Solution for Local Mapping.” Online Feature Story, from <http://www.worldbank.org/en/news/feature/2016/01/07/drones-offer-innovative-solution-for-local-mapping>.
 - . 2016b. “Tanzania: Using Drone Technology to Secure Land Rights.” Online; <https://irevolutions.org/2015/08/19/world-bank-using-uavs/>.
 - . 2017a. *World Development Report 2017: Governance and the Law*. Washington, DC: World Bank.
 - . 2017b. Project Appraisal Document: Municipal Development and Urban Resilience Project.
 - . Online. CDD Toolkit. Governance and Accountability Dimensions. Guidance note: Enhancing Governance and Accountability in Community-Driven Development-Based Operations. An Overview of Risks and Responses.
- Yazdani, M., D. Bercovitch, and J. Charles-Voltaire. 2014. Knowledge transfer on urban violence: from Brazil to Haiti. *Environment and Urbanization*, 26(2), 457-468.

