



# Building Urban Resilience

An Evaluation of the World Bank Group's  
Evolving Experience (2007-17)



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The Birds of Peace, by Fernando Botero,  
stand in Medellín, Colombia. The original  
statue was blown up by terrorists in 1995  
in an explosion that killed 23 people.  
However, instead of replacing the partially  
destroyed statue, Botero created a second  
identical one in 2000 to symbolize the  
city's resilience.

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October 2, 2019



**IEG**  
INDEPENDENT  
EVALUATION GROUP

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Careful observation and analysis of program data and the many issues impacting program efficacy reveal what works as well as what could work better. The knowledge gleaned is valuable to all who strive to ensure that World Bank goals are met and surpassed.



# contents

Abbreviations	v
Acknowledgments	vi
Overview	vii
Management Response	xiv
Management Action Record	xviii
Report to the Board from the Committee on Development Effectiveness Subcommittee	xxvii
<hr/>	
1. Understanding Urban Resilience	1
Resilience as a Corporate Goal	3
Evaluation Framework	6
Evaluation Methodology	7
<hr/>	
2. Operationalizing Urban Resilience in the World Bank Group	11
Urban Resilience at the Operational Level	14
Portfolio Review Findings	14
<hr/>	
3. Evolving Resilience at the Urban System Level	35
Resilience Risk Identification at the Project and Portfolio Levels	38
Building Urban Resilience at the System Level: Assessing the Bank Group's Contributions along a Continuum	40
<hr/>	
4. Urban Resilience Financing Models	50
Reliance on External Sources of Finance for Mainstreaming Urban Resilience	52
Catastrophe Drawdown Options and Contingency Emergency Response Components	53
IFC's Resilience Partnership with the Rockefeller Foundation	54
<hr/>	
5. Conclusions and Recommendations	57
<hr/>	
Bibliography	61
<hr/>	
<b>Boxes</b>	
Box 2.1. Integration of Resilience Risks into Project Cost-Benefit Analysis	20
Box 2.2. Crime Prevention through Environmental Design	26
Box 2.3. Early Warning Systems and Hydrometeorology	30

## Figures

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Figure 1.1. References to “Resilience” and “Disaster Risk Management” in GFDRR’s Annual Reports (2009–17).	4
Figure 1.2. A Systems-Level Urban Resilience Framework: A Continuum Driven by Resilience Characteristics	7
Figure 2.1. Integration of Design Standards in Line with Resilience Risks and Risk Considerations in Infrastructure Design in Projects in Urban Areas, FY07–09 and FY15–17	15
Figure 2.2. Skills Compositions in Urban Flood and Drought Projects Implemented by the Social, Urban, Rural, and Resilience and Water GPs (Approved in FY15–17)	17
Figure 2.3. Aligning the WHO/UNICEF Joint Monitoring Program for Water Supply, Sanitation, and Hygiene Standards with the ACAT Model	18
Figure 2.4. Gender-Informed Activities in Projects in Urban Areas, FY07–09 and FY15–17	22
Figure 2.5. Inclusion (Persons with Disabilities and the Elderly) Activities in Projects in Urban Areas, FY07–09 and FY15–17	23
Figure 2.6. Inclusion (Children or Youth) Activities in Projects in Urban Areas, FY07–09 and FY15–17	24
Figure 2.7. Coordination Activities within Projects in Urban Areas, FY07–09 and FY15–17	28
Figure 2.8. Reflectiveness Activities in Projects in Urban Areas, FY07–09 and FY15–17	29
Figure 2.9. Criticality Assessment in the Belize Climate-Resilient Infrastructure Project	32
Figure 2.10. Redundancy within Projects in Urban Areas, FY07–09 and FY15–17	33
Figure 3.1. Resilience Risks Identified in Urban Transport Portfolios, FY15–17	39
Figure 3.2. IFC Projects per Strategic City (number)	46

## Tables

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Table 2.1. Social Inclusion in Water, Transport, and SURR Projects in Urban Areas (percent)	22
Table 3.1. The Contribution of the City Strength Diagnostic Process in Accra, Addis Ababa, and Can Tho	42
Table 4.1. Trust Fund Contributions to the World Bank’s Resilient Transport Partnership, FY14–18	53

## Appendixes

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Appendix A. Methodology	77
Appendix B. A Systems Perspective on Urban Flood Resilience in Ghana	101
Appendix C. List of Persons Consulted	104
Appendix D. Portfolio Review Project List	123

# abbreviations

ACAT	awareness, coping, adapting, and transforming
BRT	bus rapid transit
CAT DDO	catastrophe deferred drawdown option
CERC	Contingency Emergency Response Components
CSD	City Strength Diagnostic
DRM	disaster risk management
FCS	fragile and conflict-affected situation
GFDRR	Global Facility for Disaster Risk and Recovery
GP	Global Practice
IDA	International Development Association
IEG	Independent Evaluation Group
IFC	International Finance Corporation
MFD	Maximizing Finance for Development
MIGA	Multilateral Investment Guarantee Agency
PAD	project appraisal document
PPP	public-private partnership
SCD	Systematic Country Diagnostic
SURR	Social, Urban, Rural, and Resilience
WRI	World Resources Institute

All dollar amounts are U.S. dollars unless otherwise indicated.

# acknowledgments

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## Overview

### IN ITS 2017 CORPORATE STRATEGY DOCUMENT,

the “Forward Look: A Vision for the World Bank Group in 2030—Progress and Challenges,” the Bank Group identifies “strengthening resilience” as a key contributor to the twin goals of reducing extreme poverty and boosting shared prosperity. This evaluation examines the Bank Group’s evolving experience in building resilience in urban areas during 2007–17.

### The Urban Resilience Challenge

Most urban growth is taking place in developing countries and emerging economies in an informal and unmanaged way (OECD 2017). An estimated 1.4 million people move into urban areas each week. More than 30 percent of city residents in South Asia and 60 percent in Sub-Saharan Africa live in slums (UN-Habitat 2016). Increasing numbers of internally displaced people and refugees are also settling in cities.

The term “resilience” relates in general to the ability to recover from, or adjust easily to, misfortune or change. Rapid urban development creates socioeconomic vulnerabilities and puts substantial pressure on cities that find themselves unable to provide basic services and manage risks from shocks or chronic stresses. Two examples illustrate the scale of the risks: the average annual global losses associated with disasters in the built environment are estimated at \$314 billion (UNISDR 2015). The cost of crime and violence in Latin America and the Caribbean represents an annual loss of \$236 billion (or 2.2 percent of the annual regional gross domestic product—public-private partnership estimates) (IDB 2017).

Cities that invest in and implement policies that build resilience are better equipped to withstand shocks, address chronic stresses, and mitigate the risks derived from both. Weak urban resilience, on the other hand, perpetuates the poverty trap: the urban poor, particularly those living in unsafe areas and informal settlements, are often the most vulnerable to risks and suffer disproportionately when they materialize.

The focus of this evaluation is the Bank Group’s support to clients in building urban resilience—to cope, recover, adapt, and transform—in the face of shocks and chronic stresses. The main objective is to draw lessons from the Bank Group’s evolving experience to inform future efforts at urban resilience building.

## Evaluation Framework and Methodology

As a starting point, the evaluation considered the definition of urban resilience presented in *Investing in Urban Resilience* (World Bank 2016b). It defines urban resilience as “the ability of a system, entity, community, or person to adapt to a variety of changing conditions and to withstand shocks while still maintaining its essential functions” (12).

Urban resilience is a complex theme requiring cross-sectoral analysis at multiple levels to assess how interventions affect system change. Yet, in the absence of an institutional process to assess urban resilience, the evaluation built on the World Bank’s analytical work and operational experience to develop a two-part framework to assess urban resilience at the *operational* and *system* levels.

**(i) Urban resilience at the World Bank operational level.** The evaluation uses five widely accepted urban resilience characteristics, which the World Bank also works with, to assess how well they are integrated in the design, implementation, and monitoring of operations in urban areas. The five resilience characteristics are

- Robustness—integrity and strength of infrastructure and urban systems, including their reliability and ability to withstand shocks;
- Inclusion—socially inclusive urban systems ensure that the most vulnerable people benefit equally from resilience activities;
- Coordination—between agencies, sectors, and jurisdictions to plan, prepare, and support integrated responses in the face of stresses and shocks;
- Reflectiveness—systems that learn and evolve based on shared knowledge and experience;
- Redundancy—alternate pathways within urban systems to manage resilience risks.

The evaluation reviewed the design of 235 projects in urban areas approved in two periods (FY07–09 and FY15–17) by three Global Practices (Social, Urban, Rural, and Resilience; Transport; Water) to assess how they integrated the five resilience characteristics (using the project appraisal document as the unit of analysis). Using the two periods allowed for an analysis of the evolution of the World Bank’s operational approach to urban resilience. The portfolio included urban water and sanitation, flood and drought, housing and informal settlements, urban upgrading, urban transport, and urban roads and highways.

At the operational level, the assessment also included an analysis of the integration of resilience risks in cost-benefit analysis, a human resource mapping analysis, a staff survey, key expert interviews,

and two background papers on financing sources for urban resilience and World Bank approaches to addressing crime and violence.

**(ii) Resilience at the urban system level.** Using inputs from the urban resilience literature, the evaluation also developed the awareness, coping, adapting, and transforming (ACAT) model to benchmark and assess the contribution of Bank Group activities to resilience building at the urban system level.

The ACAT model assumes that urban resilience is achieved along a continuum and that several factors enable it. Initial phases relate to an enhanced level of *awareness* about risks and an ability to *cope* or withstand shocks while providing essential functions. Resilient urban systems then *adapt* their infrastructure and institutions to mitigate those identified risks, reduce losses, and recover swiftly. Urban system *transformation* takes place with the implementation of policies and investments to withstand shocks and stresses without severe interruptions to development. Urban systems can transform themselves even further by unlocking economic and social potential through multiuse infrastructure, risk-sensitive land use planning, and cohesive social policies.

The evaluation applied the ACAT model to nine city case studies covering the different ways the World Bank and International Finance Corporation (IFC) engage with urban systems. The case studies include the following:

- All cities that piloted the World Bank's urban resilience City Strength Diagnostic Tool;
- Cities where the World Bank financed a flagship or programmatic, sector-led approach to building urban system-level resilience;
- Cities with pragmatic, no-regrets approaches that have helped them cope with shocks but lack adaptive measures; and
- IFC's Cities Initiative, a strategic engagement with municipal clients that offers a package of infrastructure-related investment and advisory services.

At the system level, the evaluation also included an analysis of how resilience considerations are integrated in Systematic Country Diagnostics, Country Partnership Frameworks, and Urbanization Reviews, the World Bank's flagship urban analytical product.

## Findings and Recommendations

### Understanding Urban Resilience

The Bank Group has innovated with different approaches to building resilience in cities with varying needs and capacities. Because building resilience involves "learning by doing," innovative efforts that include cross-sectoral collaboration are relevant and should be fostered. However, the evaluation found that there is no institutional framework or process in the Bank Group to understand and assess how such innovations are contributing over time to resilience building within urban systems. The lack of a shared understanding of "urban resilience" (term, scope, and approach) further limits the ability of the Bank Group to learn.

The evaluation found that the Bank Group’s approach to urban resilience needs to address chronic stresses in line with client needs *in addition to* acute shocks. Such chronic urban stresses include, among others, water scarcity and drought, pandemics, crime and violence, and pollution. Approaches need to be “people-centric” and offer nature-based solutions.

Given political and fiscal constraints, clients express the need for flexibility, prioritization, and realism regarding what is feasible. Municipal clients that lack reliable services are more interested in achieving a basic level of resilience while maintaining hard-won urban development gains.

There is an organizational challenge because while many communities of practice in the Bank Group engage in urban resilience activities, “resilience” is strongly identified with the Social, Urban, Rural, and Resilience Global Practice (GP). There are also no stated roles for IFC and the Multilateral Investment Guarantee Agency, which makes it difficult to identify opportunities for synergies within and among Bank Group institutions.

The evaluation also found that GP collaboration is insufficient. Limited incentives for cross-support and competition among GPs explain the low level of collaboration. By contrast, collaboration among GPs surges in response to disasters. Emerging cross-cutting efforts that promote resilience in urban transport and water supply have shown potential to overcome the lack of collaboration, especially if they can be scaled up and sustained.

**Recommendation 1.** The Bank Group should systematically identify and track progress of interventions that build urban resilience to chronic stresses and acute shocks, across its institutions.

### Urban Resilience at the Operational Level

At the operational level, World Bank project designs increasingly integrate resilience characteristics, which is likely to lead to more resilient outcomes. A downside, however, is that such integration in projects that finance the same activities is inconsistent. This leads to different solutions to similar challenges, which may not be optimal from a “resilience lens.” Two factors that are associated with such differentiated designs are the skill mix and the team composition.

**Robustness.** Since 2007, project appraisal documents increasingly refer to design standards in line with resilience risks (for example, flood protection design standards; building codes). However, the application of those standards is inconsistent within sectors and across GPs that finance the same type of activities. Project documents may indicate how infrastructure is adjusted to mitigate resilience risks but not the degree of risk tolerance.

The identification of resilience risks, as integral to a project’s economic analysis, has risen from 49 percent to 68 percent between the two evaluation periods, but the incorporation of those risks into cost-benefit analysis has not been proportional, from 30 percent to 37 percent. The underestimation of costs and the overestimation of benefits indicates an inaccurate assessment of the project’s viability from a resilience lens.

**Coordination.** While interagency coordination is critical for detecting and addressing resilience risks, the number of World Bank–financed activities that support interagency and interjurisdictional

coordination has declined in some sectors. This undermines the potential of projects to contribute to system-level resilience.

**Inclusion.** The three GPs assessed in the evaluation have improved poverty targeting and gender integration in their project design. While projects increasingly recognize the vulnerability of excluded groups (the elderly, persons with disabilities, youth, and so on), they often do not provide dedicated support, which leads to an inequitable distribution of resilience benefits.

**Recommendation 2.** The design and implementation of World Bank projects that build urban resilience should systematically incorporate resilience characteristics and articulate their application throughout the project cycle. These should include the following: (i) design standards in line with resilience risks, (ii) cost-benefit analysis in line with resilience risks, (iii) city and interjurisdictional coordination, and (iv) inclusive approaches for vulnerable people.

**Crime and violence.** Addressing urban crime and violence is linked to the World Bank's Social Inclusion and Fragility, Conflict, and Violence agendas, especially in cities with rapid population growth. Approximately 65 percent of urban residents are victimized in rapidly growing cities in developing countries (UN 2016).

The World Bank has played a strong role through its analytical and capacity building work on addressing urban crime and violence, including by helping clients to identify drivers and economic costs.

In Latin American cities, technical assistance programs have built client capacity. Participatory, multisector approaches that adapt the built environment and target at-risk groups have resulted in perceptions of increased safety. Attribution remains an issue because many factors affect crime and violence.

Most of the World Bank's tools, expertise, and assistance on crime and violence to date have been developed for the Latin America region. Yet crime and violence risks are increasingly undermining urban resilience in other regions, which indicates the need to broaden the World Bank's tool kit and approach.

**Recommendation 3.** In urban areas where the client has identified crime and violence as a resilience risk, the World Bank's support should be based on a localized typology of crime and violence that is informed by relevant analytical work. This approach should be supported by an assessment of the mechanisms most effective at reducing crime and violence within operations.

### Urban Resilience at the System Level

The Bank Group does not systematically assess resilience risks at the urban system level, which inhibits its ability to identify and strategically address the most critical risks. The treatment of urban resilience risks in country portfolios is unbalanced and incomplete. While sectors identify risks linked to the underlying design of investments, they do not identify urban system risks. Urbanization Reviews are not designed to assess resilience risks and, thus, cannot provide critical resilience inputs to the Systematic Country Diagnostics.

To support urban resilience at the system level, the World Bank and IFC have used various approaches that have led to awareness raising and coping behaviors, and, to a lesser extent, system adaptation.

One such approach is the City Strength Diagnostic pilot process. In Accra and Addis Ababa, it has been effective at identifying and raising awareness about resilience risks and has facilitated a coordinated approach among GPs and within cities, but changes to the built environment will take time. In more advanced cities supported by the World Bank, such as Can Tho, adaptive institutional behaviors are being accompanied by increased resilience within the built environment. The pilot has not been scaled, however.

Most World Bank support in urban areas is provided through sector-led approaches, often through water and transport investments. The assessed sector-led, programmatic approaches have effectively raised awareness and built adaptive capacity to address binding constraints at the system level. These have yielded urban resilience outcomes, incrementally, along the ACAT continuum. Examples include seismic risk reduction in Istanbul, decreased congestion and social inclusion in Bogotá, and system-level flood management in Chongqing. These outcomes are associated with (i) a sustained engagement, (ii) resilience-related risk diagnostics, and (iii) iterative learning that allowed for adaptive management across project cycles. Such complex engagements demonstrate the need for a flexible lending instrument, such as the multiphase programmatic approach since results are nonlinear and require adaptive management.

Pragmatic, “no-regret” approaches that support coping are often the only option in politically constrained environments, such as in Haiti. Multisectoral interventions in Haiti have addressed critical urban risks, but awareness and institutional learning are lacking, and the built environment is fragile. Short-term fixes (for example, dredging to address urban flooding in Cap-Haïtien) enable coping but are not facilitating system adaptation. Globally, pragmatic approaches could be better positioned within a resilience-building investment strategy (for example, dredging activities can be paired with other forms of finance to address system-level risks at the watershed level).

IFC’s Cities Initiative is well poised to build resilience through its engagements with municipal clients, especially in cities where it finances multiple infrastructure investments and advisory services. However, IFC does not use resilience risk assessments with municipal clients. Multiple and phased investments in Izmir improved access to municipal services. Yet, in the absence of a resilience risk-informed planning tool, robustness (to seismic risk) and attention to inclusion at the system level, were lacking. Though these interventions supported data for decision-making, the municipal role in maintaining and managing data systems was underemphasized.

**Recommendation 4.** When the Bank Group finances multiple interventions that build urban resilience in a country, such a portfolio of interventions should be informed by diagnostics of urban system risks, to ensure that they are complementary and coordinated. As part of this effort to build urban resilience, emphasis should be placed on developing sustained engagements to help cities adapt and transform in the face of stresses and shocks.



**Recommendation 5.** IFC should support its public and private sector Cities Initiative clients through available resilience risk assessment and mitigation tools to strengthen development impacts. In doing so, IFC should coordinate with the World Bank and the Multilateral Investment Guarantee Agency to identify opportunities for leveraging knowledge and skills, including those on urban data management.

### **Financing Models for Urban Resilience**

The World Bank has helped crowd in funding for important urban resilience–building activities. It has stated an aim to leverage \$500 billion for urban resilience in 500 cities. However, its capital mobilization strategy for urban resilience is unclear.

Efforts to mainstream resilience to date reveal a dependency on a single program, the Global Facility for Disaster Risk and Recovery, which includes an urban resilience engagement area that has funded much of the World Bank’s analytical work on the subject. Since 2014, the Global Facility for Disaster Risk and Recovery has financed 91 percent of the costs of 68 knowledge and technical assistance products related to urban resilience. At the portfolio level, the incremental administrative costs of mainstreaming resilience are high compared with standard administrative costs.

In the short term, this funding modality can help the World Bank demonstrate the benefits of investing in resilience building. However, over time, there may be a need to shift to World Bank budget, private capital, and client financing arrangements, where feasible.

IFC’s resilience-building partnership with the Rockefeller Foundation was used to carry out due diligence and to help mitigate social risks. But the facility has been slow to disburse, and it mirrors too closely other funds that support performance standards. Links between the Cities Initiative and Rockefeller’s 100 Resilient Cities have not fully materialized.

**Recommendation 6.** The World Bank and IFC should articulate long-term financing plans for building urban resilience in line with stated aims, aligned with client financial needs and the nature and magnitude of their resilience risks.

# management response

The management of the World Bank Group welcomes the report of the Independent Evaluation Group (IEG), *Building Urban Resilience: An Evaluation of the World Bank Group's Evolving Experience (2007–17)*. This evaluation faced the challenging task of examining a relatively new and evolving concept and assessing a theme that cuts across a wide range of Global Practices. The report is a welcome learning exercise that provides management with useful observations of the Bank Group's experience with a large number of urban resilience activities and other relevant and supporting work. We are grateful for the opportunities to engage with our IEG colleagues through constructive and informative discussions at various stages of the evaluation.

## World Bank Management Response

The concept of urban resilience is relatively new in the World Bank. Its definition and use have been evolving rapidly over the past few years, and the definition is likely to continue to evolve. There is a broad effort to mainstream resilience across World Bank operations and across sectors and practices, particularly with regard to resilient infrastructure. In addition, recent Country Partnership Frameworks are increasingly identifying “building resilience” as one of their pillars, with an emphasis on building the resilience of households not just to shocks but also to stresses through, for example, improvement of social safety nets, financial inclusion, and the recognition of the role of gender-based violence. This evolution of the approach to resilience has translated into a range of cross-sectoral initiatives, even within urban spaces (for example, urban safety nets, safe schools, smart cities, and land management). Although there is no commonly agreed definition of urban resilience applied across the Bank Group, a considerable amount of innovation and growth has occurred in activities that specifically target urban resilience and activities that broadly support resilience.

This evaluation looked narrowly at the Bank Group's contribution to urban resilience through activities in three Global Practices: Social, Urban, Rural, and Resilience; Transport; and Water. The report helps identify a benchmark of “urban resilience” activities in the three practices with useful insights on where improvements are warranted and based on which the World Bank can more clearly target stresses, assess the effects of our engagement, and foster further learning.

The World Bank is continuing to work toward developing a definition that adequately captures the range of activities and interventions that support and influence urban resilience and learning by doing. Tightening the definition requires more work and more time. It will therefore not be possible to systematically identify and track the progress of all interventions that build urban resilience across the World Bank, the International Finance Corporation (IFC), and the Multilateral Investment Guarantee Agency, as recommended in the evaluation. That said, management agrees that there needs to be better analysis of progress being made toward the World Bank's broader goal of building the resilience of cities. This evaluation provides a useful benchmark of the current portfolio in the three sectors addressed. It allows management to define the best way to track the progress being made in building the resilience of cities that the World Bank has been supporting, regardless of which sector the interventions are housed in or whether they have been defined as “urban resilience” projects.



Projects address risks and integrate standards according to client conditions, needs, and budgets. Thus, there is always going to be variation in the degree to which resilience characteristics are incorporated into projects and in the resilience standards to which projects are designed. Management agrees that resilience characteristics should be more systematically incorporated into project design, and the way the project design aims to address the identified risks needs to be better articulated in the main project documents, such as in the project appraisal document (details of resilience standards and the way risks are incorporated in cost-benefit analysis are currently usually available in documents such as the Terms of Reference for detailed engineering designs and in separate economic analysis reports). In doing so, it should be kept in mind that not all projects in urban areas will be able to, or should try to, tackle all resilience challenges, and prioritization will be necessary to focus clients' scarce resources on the most vulnerable populations and assets and the most important potential shocks and chronic stresses.

Management welcomes the report's assessment of the important role the World Bank has played in supporting cities in addressing crime and violence and acknowledges that this work has focused mainly in Latin America. Crime and violence are two of many issues that deserve extra attention in the World Bank's work. As the World Bank has limited resources and agrees its country program jointly with the client, the identification of crime and violence as a resilience risk is not the only factor that determines what will be financed. Management agrees that where it is working with the client to address crime and violence as a priority risk, it will address that risk through robust analysis, drawing on domestic and international experience and local typologies.

Projects undertaken to address urban resilience issues should be informed by diagnostics of resilience risks whenever practicable. Management concurs that emphasis should be placed on supporting cities to achieve their long-term development objectives and focusing on integrating resilience into sectoral investments. Engaging with cities upstream on mainstreaming resilience into their urban and spatial planning and in their capital investment planning process is vital. At the same time, it is not evident that it would be beneficial to require country teams to undertake a diagnostic of urban system risks for a country whenever the World Bank engages in more than one urban resilience project in that country, as recommended in the evaluation. For example, the country team could be supporting a project developing an early warning system in a coastal city and also supporting a slum upgrading project in another interior city, such that neither project intersects in any meaningful way with the other. Under such circumstances, the recommendation that the country team complete a diagnostic of the country's urban system risks appears to be excessively prescriptive. That said, management agrees that where projects intersect in some significant manner, such that what happens in one project potentially affects what happens in the other, diagnostics should be undertaken to ensure the projects' coordination and complementarity.

Finally, management wishes to note that it cannot commit to a specific financing plan for urban resilience when that urban resilience work is subject to client demand and market conditions and expected to occur over a long time. More specifically, management notes that the World Bank's aim to crowd-in investment for urban resilience is an aspirational goal, to be achieved over two decades, and also that this aspirational goal reflects the World Bank's overarching goal of moving

development financing “from billions to trillions” through leveraging the private sector. In this context, it is anticipated that the Global Facility for Disaster Risk and Recovery (GFDRR) will continue to be an important supporter of urban resilience activities at a similar pace to that over the past five years. The World Bank has been building on the success of the GFDRR experience to scale up its ability to meet client and market demand in this area. In fact, the City Resilience Program, established through GFDRR financing, is on track to raise additional resources that will soon exceed those of the GFDRR multidonor trust fund. In parallel, the World Bank is building partnerships with the IFC Cities team, the Guarantees and Financial Structuring team, and the Global Infrastructure Facility to leverage capital for urban resilience investments to support the Maximizing Finance for Development (MFD) objective. An example of this emerging approach is in Dakar, where \$100 million of World Bank lending for flood management is being complemented with an equal amount of co-financing from the Spanish Agency for International Development Cooperation and the Agence française de développement, in addition to approximately \$50 million that will be raised potentially from IFC and private sources to build a landfill that will materially reduce flood risk in the city. This MFD approach will be used to continue growing support to address resilience risks.

## IFC Management Response

IFC management welcomes the report by the IEG on *Building Urban Resilience: An Evaluation of the World Bank Group’s Evolving Experience (2007–17)*. Resilience is an important aspect of urban development.

IFC agrees that it has an important role to play through its municipal relationships, advisory support and investments with cities to help ensure that the urban development it supports is resilient and sustainable. Mobilizing private investment into cities supports IFC’s mandate to drive economic development through the private sector. IFC helps cities leverage private finance, solutions, and innovation to address their growing need for resilient infrastructure and efficient service delivery through both investments and advisory services. The Rockefeller Foundation, SECO, Austria, and other donors have been strong partners to the IFC Cities Initiative, which have allowed IFC to support various cities in its client countries across the world.

IFC is working toward articulating its contributions to urban resilience. With respect to recommendation 1, IFC has been working to use the Anticipated Impact Measurement and Monitoring platform to better identify and track the impacts of its interventions that, as a core outcome, build urban resilience to stresses and shocks. IFC currently uses the Rockefeller definition of resilience, which includes the ability to withstand economic, social, physical, and environmental stresses and shocks. Over time, IFC will work with the World Bank to refine this definition. With respect to recommendation 5, IFC acknowledges and welcomes IEG findings and conclusions on the Cities Initiative theory of change. We will continue refining this theory of change and, as relevant, include the resilience angle and articulate resilience impacts in IFC documentation.

IFC will work with the World Bank on resilience risk diagnostics where appropriate and with its municipal clients on resilience risk assessment and mitigation. With respect to recommendations 4 and 5, the World Bank's comments on the benefits of urban risk diagnostics for a portfolio of interventions within a country, which may or may not be interrelated, are also relevant for IFC. IFC is committed to working with the World Bank in those instances where diagnostics of urban system risks are appropriate and practicable for IFC operations.

IFC will use available resilience risk assessment and mitigation tools appropriate for IFC operations and commercial activities to strengthen the development impact of its interventions with municipal clients. With respect to the finding that, in the absence of an urban planning model in Izmir, robustness [to seismic risks] and inclusion were found to be lacking, IFC management would like to clarify that IFC's interventions with cities typically focus on upstream initiatives and project-level interventions and not on urban planning and policy initiatives. In the latter areas, IFC will try to expand coordination with the World Bank. IFC agrees with the findings that data collection, ownership, management and privacy are complex matters that are growing in importance globally and agree they will be considered, in coordination with other Bank Group institutions, when relevant in IFC operations.

Long-term IFC financing plans for building urban resilience are not feasible. We understand that recommendation 6 relates to IFC support for individual city clients. IFC supports city resilience through both advisory and investment projects and works across the Bank Group to address urban resilience through applying the cascade approach to MFD and exploring private sector solutions whenever practicable. Even when the Bank Group is supporting cities through the cascade approach in urban sectors, long-term financing plans with individual city clients are not feasible given that IFC's interventions are affected by client demand and creditworthiness and country and city economics.

In addition to our response to the recommendations, IFC would like to provide brief explanations for three IEG findings. First, regarding the finding concerning the Rockefeller fund, the use of which appeared to mirror other trust funds that support Performance Standards, we would note that IFC addresses project resilience through its Performance Standards that are consistent with recognized resilience approaches. Second, regarding the finding that the Rockefeller Trust Fund was slow to disburse and that the anticipated links between the IFC Cities Initiative and Rockefeller's 100 Resilient Cities Initiative have not materialized, it is important to note that, as of March 31, 2019, IFC had deployed more than three times the amount of Rockefeller's resilience grants it had initially committed to the 100 Resilient Cities Initiative and worked to support projects identified in the initiative's strategic plans in at least one city. Third, regarding IEG's finding that the evaluation revealed a missed opportunity to link the Rockefeller grants with the strategy and planning financed by the Rockefeller Foundation at the city level, we would clarify that explicit exclusion of IFC and other 100 Resilient Cities Initiative partners from the strategy and planning process was deliberate on the part of initiative's management to maintain delineation of influence. IFC participated in several initial stakeholder engagement meetings, including in Cape Town and Buenos Aires.

## Identify and Track Urban Resilience—Building Efforts

**IEG FINDINGS AND CONCLUSIONS** Urban resilience is part of the wider resilience-building goal of the “Forward Look: A Vision for the World Bank Group in 2030—Progress and Challenges.”

The World Bank has been innovating with different approaches to building resilience in cities with varying needs and capacities. Because resilience building requires “learning by doing,” these innovative efforts, which include cross-sectoral collaboration, are relevant and should be fostered. However, there is no framework, or process, in place to understand and assess the extent to which these innovations are contributing to resilience building within urban systems, over time.

Notwithstanding the existence of a definition in its analytical work, the World Bank Group lacks a shared understanding of “urban resilience,” that is, the term, scope, and approach.

The evaluation process demonstrated that the Bank Group’s approach to urban resilience needs to address chronic stresses in line with client needs *in addition to* acute disaster shocks. Such chronic urban stresses include water scarcity and drought, pandemics, crime and violence, and pollution, among others. Any approach also needs to be “people-centric” and include nature-based solutions.

Although there are many communities of practice in resilience, organizational learning is a challenge because “resilience” is identified with one Global Practice in the World Bank (in Social, Urban, Rural, and Resilience) while there are functional resilience attributes in many others; and there are no stated roles for the International Finance Corporation (IFC) and the Multilateral Investment Guarantee Agency.

Collaboration among Global Practices in the World Bank was found to be insufficient in the Independent Evaluation Group’s urban resilience staff survey and its 2018 evaluation *Knowledge Flow and Collaboration under the World Bank’s New Operating Model*. Staff attribute a low level of collaboration to limited incentives for cross-support and competition among Global Practices.

Clients expressed the need for increased flexibility, prioritization, and a consideration of what can realistically be achieved due to existing political and fiscal constraints.

All these factors are limiting the Bank Group’s ability to identify and learn from various approaches to building urban resilience across Global Practices and institutions and to assess progress against its corporate resilience goals.

**IEG RECOMMENDATIONS** Recommendation 1. The Bank Group should systematically identify and track progress of interventions that build urban resilience to chronic stresses and acute shocks, across its institutions.

**ACCEPTANCE BY MANAGEMENT** Partially agree.

**MANAGEMENT RESPONSE** **World Bank response.** Urban resilience is a new and fluid concept. The World Bank is working toward developing a definition that adequately captures the range of activities and interventions that support and influence urban resilience and learning by doing. Tightening the definition requires more work and more time. For these reasons, it will not be possible to “systematically” identify and track progress of all interventions that build urban resilience across the World Bank, IFC, and the Multilateral Investment Guarantee Agency. That said, management agrees that there needs to be better analysis of progress being made toward the World Bank’s broader goal of building the resilience of cities. This evaluation provides a useful benchmark of the current portfolio in the three sectors addressed. It allows management to define the best way to track the progress being made in building the resilience of cities that the World Bank has been supporting, regardless of

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which sector the interventions are housed in or whether they have been defined as “urban resilience” projects.

**IFC response.** IFC has been working to use the Anticipated Impact Measurement and Monitoring platform to better identify and track the impacts of its interventions that, as a core outcome, build urban resilience to stresses and shocks. IFC currently uses the Rockefeller definition of resilience, which includes the ability to withstand economic, social, physical, and environmental stresses and shocks. Over time, IFC will work with the World Bank to refine this definition.



## Systematically Incorporate Resilience Characteristics in Projects

**IEG FINDINGS AND CONCLUSIONS** There has been increasing integration of resilience characteristics in assessed operations, which is likely to lead to more resilient outcomes. However, as measured at appraisal, the inconsistent integration of resilience characteristics in projects financing the same type of activities is leading to differentiated solutions that may not be optimal from a resilience perspective. Factors driving differentiated designs in projects financing the same type of activities are associated with skill mix and team composition.

**Robustness.** Since 2007, project appraisal documents increasingly refer to design standards in line with resilience risks (for example, flood protection design standards; building codes). However, only one-half of all assessed projects articulate a design standard in line with identified resilience risks in the project appraisal document. Projects are increasingly indicating how project-financed infrastructure is considering risks, but the threshold, or level of risk tolerance, is often not made explicit. Support for asset management has increased at the sector level but rarely at the urban system level.

The identification of resilience risks, as integral to a project's economic analysis, has risen over the two periods (from 49 percent to 68 percent), but the incorporation of these risks into cost-benefit analysis has not been proportional (from 30 percent to 37 percent). The underestimation of costs, and the overestimation of benefits, risks producing an inaccurate assessment of project viability from a resilience perspective.

**Coordination.** In urban systems, interagency coordination is critical for detecting gaps in infrastructure and service coverage, identifying funding needs and responsibilities, and clarifying mandates across sector agencies. Project-financed activities in support of interagency and interjurisdictional coordination have declined in some sectors, however, and this undermines the potential of projects to contribute to system-level resilience.

**Inclusion.** Across the three key Global Practices, poverty targeting and gender integration has improved, but while projects increasingly recognize the vulnerability of excluded groups (the elderly, persons with disabilities, youth, and so on) they often do not provide dedicated support, which leads to an inequitable distribution of resilience benefits.

**IEG RECOMMENDATIONS** Recommendation 2. The design and implementation of World Bank projects that build urban resilience should systematically incorporate resilience characteristics and articulate their application throughout the project cycle. These should include the following: (i) design standards in line with resilience risks, (ii) cost-benefit analysis in line with resilience risks, (iii) city and interjurisdictional coordination, and (iv) inclusive approaches for vulnerable people.

**ACCEPTANCE BY MANAGEMENT** Agree.

**MANAGEMENT RESPONSE** Projects address risks and integrate standards according to client conditions, needs, and budgets. Thus, there is always going to be variation in the degree to which resilience characteristics are incorporated in projects and in the resilience standards to which projects are designed.

Management agrees that resilience characteristics should be more systematically incorporated in project design, and the way the project design aims to address the identified risks needs to be better articulated in the main project documents such as in the project appraisal document (details of resilience standards and the way risks are incorporated in cost-benefit analysis are currently usually

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available in documents such as Terms of References for detailed engineering designs and in separate economic analysis reports). In doing so, it should be kept in mind that not all projects in urban areas will be able, or should try, to tackle all resilience challenges, and prioritization will be necessary to focus clients' scarce resources on the most vulnerable populations and assets and the most important potential shocks and chronic stresses.

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## Use Analytical Work to Inform Support in Areas of Crime and Violence

**IEG FINDINGS AND CONCLUSIONS** The crime and violence agenda is increasingly important from an urban resilience perspective since crime and violence is more likely to occur in rapidly growing cities and often occurs in a city's poorest parts. It is also linked to the fragility, conflict, and violence agenda because conflict is increasingly becoming urbanized.

The World Bank has played a strong role through its analytical and capacity building work on urban crime and violence, including by helping clients to identify underlying drivers and to identify economic costs.

Through large technical assistance and capacity building programs, the World Bank has built the capacity of government agencies to implement urban crime and violence prevention approaches in Brazil, Colombia, Honduras, Jamaica, and Mexico. Participatory, multisector approaches that adapt the built environment and target at-risk groups have resulted in perceptions of increased safety. Attribution is an issue, however, because many factors affect crime and violence.

To date, most of the World Bank's tools, expertise, and assistance has been developed for the Latin American region. Yet crime and violence risks are increasingly undermining urban resilience in other regions, which will require a broadening of the tool kit and approach.

**IEG RECOMMENDATIONS** Recommendation 3. In urban areas where the client has identified crime and violence as a resilience risk, the World Bank's support should be based on a localized typology of crime and violence that is informed by relevant analytical work. This approach should be supported by an assessment of the mechanisms most effective at reducing crime and violence within operations.

**ACCEPTANCE BY MANAGEMENT** Partially agree.

**MANAGEMENT RESPONSE** Management welcomes the report's assessment of the important role the World Bank has played in supporting cities in addressing crime and violence and acknowledges that this work has focused mainly in Latin America. Crime and violence are two of many issues that deserve extra attention in the World Bank's work. As the World Bank has limited resources and agrees its country program jointly with the client, the identification of crime and violence as a resilience risk is not the only factor that determines what will be financed. Management agrees that where it is working with the client to address crime and violence as a priority risk, it will address that risk through robust analysis, drawing on domestic and international experience and local typologies.



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## Ensure That Urban Resilience Interventions in a Country Are Complementary and Coordinated

**IEG FINDINGS AND CONCLUSIONS** The Bank Group does not systematically assess resilience risks at the urban system level, and this inhibits its ability to identify and strategically address the most critical risks. Sectors identify risks that are linked to the underlying design of their sector investments. Most sector projects do not identify risks at the urban system level. *Urbanization Reviews*, the flagship urban analytical tool, is not designed to assess resilience risks and thus cannot provide critical inputs to the Systematic Country Diagnostics.

An examination of three different entry points used by the World Bank in urban areas provides illustrative examples of how these have led to varying levels of urban resilience. These show the importance of system-level risk identification, multisectoral coordination, and a sustained, phased approach that adapts to changing circumstances. They also show that sometimes the World Bank needs to urgently pursue a “no-regrets, pragmatic approach” but that this should be done as part of a wider resilience-building strategy.

IFC’s Cities Initiative does not use resilience risk assessments with municipal clients in its strategic cities, and this is not aligned with corporate resilience goals.

**IEG RECOMMENDATIONS** Recommendation 4. When the Bank Group finances multiple interventions that build urban resilience in a country, such a portfolio of interventions should be informed by diagnostics of urban system risks, to ensure that they are complementary and coordinated. As part of this effort to build urban resilience, emphasis should be placed on developing sustained engagements to help cities adapt and transform in the face of stresses and shocks.

**ACCEPTANCE BY MANAGEMENT** Partially Agree

**MANAGEMENT RESPONSE** **World Bank response.** Projects undertaken to address urban resilience issues should be informed by diagnostics of resilience risks whenever practicable. Management concurs that emphasis should be placed on supporting cities to achieve their long-term development objectives and focusing on integrating resilience into sectoral investments. Engaging with cities upstream on mainstreaming resilience into their urban and spatial planning and in their capital investment planning process is vital.

At the same time, it is not evident that it would be beneficial to require country teams to undertake a diagnostic of a country’s urban system risks whenever the World Bank engages in more than one urban resilience project in that country. For example, the country team could be supporting a project developing an early warning system in a coastal city and also supporting a slum upgrading project in another interior city, such that neither project intersects in any meaningful way with the other. Under such circumstances, the recommendation that the country team complete a diagnostic of the country’s urban system risks appears to be excessively prescriptive. That said, management agrees that where projects intersect in some significant manner, such that what happens in one project potentially affects what happens in the other, diagnostics should be undertaken to ensure the projects’ coordination and complementarity.

**IFC response.** The World Bank’s comments on the benefits of urban risk diagnostics for a portfolio of interventions within a country, which may or may not be interrelated, are also relevant for IFC. IFC is committed to working with the World Bank in those instances where diagnostics of urban system risks are appropriate and practicable for IFC operations.

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## IFC: Increase Impact through Resilience Risk Assessment and Mitigation Tools

**IEG FINDINGS AND CONCLUSIONS** IFC's Cities Initiative is well poised to help municipal clients achieve urban resilience, but the aim is not made explicit in its theory of change, in the Board document reports of projects linked to the initiative, nor in the implementation plans for the Cities Initiative platform.

The Initiative's flagship investments in Izmir have led to improved municipal infrastructure and services, but in the absence of an urban planning model that integrates resilience risks, robustness (to seismic risk) and inclusion were found to be lacking.

Another lesson emerging from the Izmir flagship experience is the need to put data systems at the center of municipal investments—including issues of the ownership of data and its use.

IFC's ability to leverage data is much less effective than the World Bank. In the case of Izmir, private sector firms were hired to create a smart city dashboard, but data ownership was not featured as a focal issue in project preparation, nor was the capacity of the client for continued use of data for city-level decision-making.

**IEG RECOMMENDATIONS** Recommendation 5. IFC should support its public and private sector Cities Initiative clients through available resilience risk assessment and mitigation tools to strengthen development impacts. In doing so, IFC should coordinate with the World Bank and the Multilateral Investment Guarantee Agency to identify opportunities for leveraging knowledge and skills, including those on urban data management.

**ACCEPTANCE BY MANAGEMENT** Partially agree

**MANAGEMENT RESPONSE** **IFC response.** IFC acknowledges and welcomes IEG findings and conclusions on the Cities Initiative theory of change. We will continue refining this theory of change and, as relevant, include the resilience angle and articulate resilience impacts in IFC documentation.

IFC will use available resilience risk assessment and mitigation tools appropriate for IFC operations and commercial activities to strengthen the development impact of its interventions with municipal clients.

With respect to the finding that, in the absence of an urban planning model in Izmir, robustness [to seismic risks] and inclusion were found to be lacking, IFC management would like to clarify that IFC's interventions with cities typically focus on upstream initiatives and project-level interventions and not on urban planning and policy initiatives. In the latter areas, IFC will seek to expand coordination with the World Bank.

IFC agrees with the findings that data collection, ownership, management, and privacy are complex matters that are growing in importance globally and agree they will be considered, in coordination with other Bank Group institutions, when relevant in IFC operations.

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## Articulate Long-Term, Client-Oriented Financing Plans

**IEG FINDINGS AND CONCLUSIONS** The World Bank has helped crowd in funding for critical urban resilience–building activities, especially for small island states.

The World Bank has pronounced an “aim” to crowd in \$500 billion for urban resilience in 500 cities and to remove 50 million people from poverty by 2035, but the capital mobilization strategy is not articulated.

Efforts to date reveal that there has been a high dependency on a single program, the Global Facility for Disaster Risk and Recovery, that includes an urban resilience engagement area. Much of the World Bank’s analytical work on urban resilience is funded by this engagement area. At the portfolio level, the incremental administrative costs of mainstreaming resilience are relatively high compared with standard administrative costs.

IFC’s partnership with the Rockefeller Foundation for resilience building has been used for due diligence and to help mitigate social risks. The facility has been slow to disburse, however, and its use too closely mirrors other trust funds that support performance standards. Anticipated links between the Cities Initiative and Rockefeller’s 100 Resilient Cities have not fully materialized.

**IEG RECOMMENDATIONS** Recommendation 6. The World Bank and IFC should articulate long-term financing plans for building urban resilience in line with stated aims, aligned with client financial needs and the nature and magnitude of their resilience risks.

**ACCEPTANCE BY MANAGEMENT** Disagree

**MANAGEMENT RESPONSE** **World Bank response.** The World Bank’s aim to crowd-in investment for urban resilience is an aspirational goal over two decades and reflects the World Bank’s overarching goal of moving development financing “from billions to trillions” through leveraging the private sector. Because the World Bank’s urban resilience work is subject to client demand and market conditions and also expected to occur over a long time, management cannot commit to a specific financing plan for that work at the present time.

It is anticipated that Global Facility for Disaster Risk and Recovery (GFDRR) will continue to be an important supporter of urban resilience activities at a similar pace as was experienced over the past five years. The World Bank has been building on the success of the GFDRR experience to scale up its ability to meet client and market demand in this area. In fact, the City Resilience Program, established through GFDRR financing, is on track to raise additional resources that will soon exceed those of the GFDRR multidonor trust fund.

In parallel, the World Bank is building partnerships with the IFC Cities team, the Guarantees and Financial Structuring team, and the Global Infrastructure Facility to leverage capital for urban resilience investments to support the MFD objective. An example of this emerging approach is in Dakar, where \$100 million of World Bank lending for flood management is being complemented with an equal amount of co-financing from Spanish Agency for International Development Cooperation and the Agence française de développement, in addition to approximately \$50 million that will be raised potentially from IFC and private sources to build a landfill that will materially reduce flood risk in the city. This Maximizing Finance for Development approach will be used to continue growing support to address resilience risks.

*(Continues on the following page.)*

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## Articulate Long-Term, Client-Oriented Financing Plans *(continued)*

**IFC response.** We understand that recommendation 6 relates to IFC support for individual city clients. IFC supports city resilience through both advisory and investment projects and works across the Bank Group to address urban resilience through applying the cascade approach to Maximizing Finance for Development and exploring private sector solutions whenever practicable. Even when the Bank Group is supporting cities through the cascade approach in urban sectors, long-term financing plans with individual city clients are not feasible given that IFC's interventions are affected by client demand and creditworthiness and country and city economics.

# Report to the Board from the Committee on Development Effectiveness Subcommittee

The subcommittee of the Committee on Development Effectiveness (CODE) met to discuss the Independent Evaluation Group evaluation entitled *Building Urban Resilience: An Evaluation of the World Bank Group's Evolving Experience (2007–17)* and draft management's response.

The CODE subcommittee welcomed the opportunity to discuss the report, which they deemed a timely, comprehensive, and useful evaluation that facilitates learning. Members highlighted the relevance of the topic, given that achieving urban resilience is a critical part of the World Bank Group's commitment to strengthen resilience, as expressed in its "Forward Look 2030," and a development imperative reflected in the Sustainable Development Goals. They were pleased to learn about the Bank Group's contributions to crowding in funding for key urban resilience–building activities; the World Bank's increasing efforts to mainstream resilience across its operations, sectors, and practices (particularly with regard to resilient infrastructure); and the International Finance Corporation's intent to continue refining the theory of change for the Cities Initiative by including, as relevant, the resilience angle and its approach to project resilience through its Performance Standards and the Anticipated Impact Measurement and Monitoring Framework. Acknowledging management's explanations about the challenge of agreeing on the concept and scope of urban resilience—a relatively new topic in the World Bank that is still evolving—members encouraged management to enhance collaboration across the Bank Group to advance on a common approach toward urban resilience that ultimately could lead to developing a systematic way to assess the extent to which the Bank Group contributes to building resilience within urban systems.

Management's introductory remarks noting that "partial agreement" with some recommendations meant they concurred with the spirit of the recommendation but differed on the wording or the evaluation's suggested implementation, were well received by the subcommittee. Nonetheless, most members stressed the management should either agree or disagree with the recommendations. Members were encouraged to hear about the broad agreement between management and the Independent Evaluation Group on the evaluation findings and recommendations on various issues, such as the need to inform a country's portfolio of related urban resilience interventions via diagnostics of urban system risks, when practicable; the necessity of engaging cities upstream on mainstreaming resilience into their urban and spatial planning; the need for more consistent and deliberate articulation of resilience characteristics in project design and documentation; better coordination and complementarity between project design standards; cost-benefit analysis in line with resilience risks; inclusive approaches for vulnerable groups; and focus on clients to support them in coping, recovering, and transforming in the face of potential shocks and stresses.

While noting management's clarifications about the Bank Group's model being client-driven and depending on market conditions, some members suggested that management could be gradually more ambitious in articulating long term financing strategies for building urban resilience in line with the twin-goals, the Sustainable Development Goals, and the aspirational goal of crowding in \$500 billion for urban resilience in 500 cities. Other members recommended that management strengthen efforts to continue working with clients in addressing the risk of crime and violence when possible, and asked management to come with new ideas to facilitate working with subnational governments and cities.



# 1

## Understanding Urban Resilience

### highlights



By 2030, 60 percent of the global population will live in cities characterized by high levels of informality. The pace of urbanization is staggering: an estimated 1.4 million people move into urban areas weekly. Nearly 95 percent of this unplanned expansion is in developing countries. Rapid, unplanned urban growth is associated with increased vulnerability, especially for the poorest and excluded parts of society. It is also associated with increased urban crime and violence. Most of the extreme poor will live in areas exposed to disasters and will lack the means to cope with or adapt to shocks and stresses.



Urban resilience is part of the resilience-building aim of the World Bank Group's "Forward Look: A Vision for the World Bank Group in 2030—Progress and Challenges." Nevertheless, there is a lack of a shared understanding about "urban resilience": the term, scope, and approach. This is limiting the Bank Group's ability to identify and learn from approaches to building urban resilience across Global Practices and institutions, and to track progress against its corporate goals.



A definition of urban resilience is presented in *Investing in Urban Resilience* (World Bank 2016b). It is “the ability of a system, entity, community, or person to adapt to a variety of changing conditions and to withstand shocks while still maintaining its essential functions.” The evaluation process demonstrated, however, that there is a need for an approach to urban resilience that addresses the multiple chronic stresses that cities are facing, including water scarcity, pandemics, crime and violence, and severe pollution, as well as acute disaster shocks.



There is also an organizational challenge since many communities of practice in the Bank Group engage in resilience-related activities, but “resilience” is identified with one Global Practice (Social, Urban, Rural, and Resilience). There are no stated roles for the International Finance Corporation and the Multilateral Investment Guarantee Agency. The need for enhanced coordination to address urban resilience issues was highlighted in the staff survey.



In the absence of an institutional process to benchmark urban resilience, this evaluation built on internal knowledge and relevant literature to develop a two-part framework to assess urban resilience at the operational and system levels. First, the framework uses five accepted resilience characteristics (robustness, inclusion, reflectiveness, coordination, and redundancy) to assess their relative incorporation in projects in urban areas across three key Global Practices (Social, Urban, Rural, and Resilience; Transport; Water). Second, it uses a model to assess the Bank Group’s contribution to resilience building at the city system level along a continuum, from awareness raising to coping, adapting, and transforming.



**MORE THAN 50 PERCENT** of today’s global population lives in cities. By 2030, this figure will have risen to 60 percent. The pace of urban expansion, and the transformation of land use, is staggering. An estimated 1.4 million persons move into urban areas every week. Most of this expansion—nearly 95 percent—is occurring in developing countries and will be characterized by informal and unmanaged growth (OECD 2017). Rapid, unplanned urban growth is associated with increased vulnerability, especially for the poorest and excluded parts of society, to multiple chronic stresses and acute shocks.

Rising inequality and exclusion in many cities threatens to undermine economic growth and social progress, particularly for the 1 billion poor who live in informal settlements (World Bank 2015b). In urban areas, the poor are disproportionately affected by shocks and chronic stresses. They tend to live in the most exposed areas—in informal settlements on the edge of cities—with limited access to early warning systems and adequate infrastructure. In the event of disaster, they have limited assets and insurance to cover losses of property and belongings (ODI 2015). By 2030, an estimated 325 million extreme poor will live in the 49 countries most prone to disasters (Shepherd et al. 2013).

The poor often lack access to urban services, rights, and opportunities, and this contributes to social upheaval, crime, and violence in cities globally (World Bank 2015c). Urban violence occurs most often in the poorest parts of a city (Winton 2004; Briceno-Leon and Zubillaga 2002, cited in World Bank 2011b). In turn, high rates of crime and violence erode resilience, threaten human welfare, and impede social development. In cities experiencing conflict and instability, urban systems and infrastructure cannot cope with population influxes and outflows, particularly when unprecedented numbers of displaced and refugee populations seek refuge in cities (Goyes et al. 2017).

## Resilience as a Corporate Goal

The World Bank Group has made “resilience” a corporate goal. “Strengthening resilience” is a pillar of the Bank Group’s “Forward Look: A Vision for the World Bank Group in 2030—Progress and Challenges.” Given the resilience challenge associated with unplanned rapid urban expansion in developing countries, addressing *urban* resilience is critical to achieving this goal. Despite this aim, the March 2018 “Forward Look” implementation update does not assess resilience, including progress toward building urban resilience: it assesses subordinate activities (World Bank Group 2018).

During the evaluation period, references to the term “resilience” have increased in Sector/Global Practice (GP) strategy updates, investment and analytical products, and Country Partnership Frameworks. Programs conceived to support disaster risk, such as the Global Facility for Disaster Reduction and Recovery (GFDRR), now more often refer to “resilience commitments” than “disaster

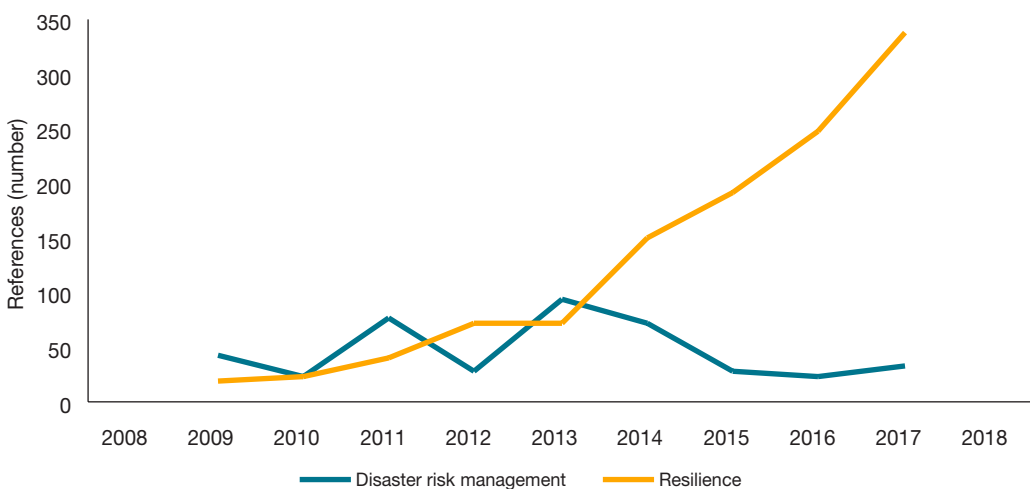
risks,” in their annual reporting. The use of the term “resilience” in GFDRR’s annual report rose significantly between 2009 and 2017, from 19 to 337 references, while rarely referencing “disaster risk management” (figure 1.1). A quarter of all Country Partnership Frameworks approved prior to September 2018 refer to “resilience” and half of those refer to resilience in an urban context. But none includes metrics to benchmark resilience achievements, including urban resilience.

Yet, a key finding of the evaluation is that the Bank Group lacks a shared understanding of “urban resilience,” that is: the term, scope, and approach. As a starting point, the evaluation considered the definition of urban resilience presented in a key publication, *Investing in Urban Resilience* (World Bank 2016b). It defines urban resilience as “the ability of a system, entity, community, or person to adapt to a variety of changing conditions and to withstand shocks while still maintaining its essential functions” (12).

The World Bank’s analytical work further explains that resilience refers to “the ability of a system to maintain or quickly return to desired functionality following a disruptive event (either natural or human induced), which may not be predictable. It incorporates the ability to avoid shocks and to manage risks, while being able to constantly adapt to change when needed and quickly transforming systems which inhibit current or future adaptive capacity.” Synergies and trade-offs must also be considered to identify win-win situations that reduce the possibility of loss and increase potential benefits (World Bank 2014a, 2016b).

However, the evaluation process demonstrated, through staff survey results and Bank Group and client interviews, that the Bank Group’s approach to urban resilience needs to address chronic

FIGURE 1.1 | References to “Resilience” and “Disaster Risk Management” in GFDRR’s Annual Reports (2009–17).



Source: Independent Evaluation Group.

Note: GFDRR = Global Facility for Disaster Reduction and Recovery.

stresses in addition to acute disaster shocks. Chronic stresses revealed through the evaluation process include water scarcity and drought, pandemics, crime and violence, and pollution, among others. As articulated in staff and client interviews, the approach needs to recognize the spatial and multijurisdictional dimension of urban resilience. It needs to be more “people-centric” and able to identify solutions that are nature based.

Most World Bank staff interviewed and surveyed indicated that the Bank Group lacks a “shared understanding” of urban resilience. Most respondents called for an expanded approach to urban resilience that includes attention to chronic stresses, in addition to acute shocks. Staff cautioned against dilution: “the term [urban resilience] becomes meaningless if it means everything” and requested a clear articulation of the World Bank’s comparative advantage, to better leverage resources and expertise in this evolving area. Feedback also frequently cited a need to anchor risk analysis within the wider urban system, and to consider political economy and sector realities. The need to identify and address “system-level risks” was emphasized—the risks that underpin stresses and shocks (to food systems, for example), while measurement challenges were also frequently referenced.

Municipal client interviews highlighted the need for flexibility, in view of the unpredictability and diversity of urban resilience risks. The interviews emphasized the need for pragmatism, prioritization, and a consideration of what is achievable in the context of fiscal constraints and a given political economy. For municipal clients lacking the most basic functions, what matters most is achieving a basic level of resilience while maintaining hard-won gains in urban systems.

There is also an organizational challenge since many communities of practice in the Bank Group engage in resilience-related activities, but “resilience” is identified with one GP (Social, Urban, Rural, and Resilience). There are no stated roles for the International Finance Corporation (IFC) and the Multilateral Investment Guarantee Agency (MIGA). This inhibits the identification and transmission of lessons about urban resilience building within and among Bank Group GPs and institutions.

The urban resilience staff survey conducted by the Independent Evaluation Group (IEG) pointed to this organizational challenge, especially as it relates to the need for enhanced coordination to address urban resilience issues: 75 percent of respondents indicated that collaboration on urban resilience is only “partially effective,” with 40 percent of these indicating that there is either “minimal” or “none.” The most pressing concerns were expressed by water experts, who reported that “sectors without relevant experience are implementing urban water projects,” such as “disaster resilience projects that finance small dams.” References were also made to urban units that “‘steal’ business on air pollution, water supply and drought and don’t inform the other GPs.”

IEG’s evaluation *Knowledge Flow and Collaboration under the World Bank’s New Operating Model* found that collaboration is at its best when there are high-visibility events such as disaster, pandemic, or famine shocks (World Bank 2018b). The evaluation found that the high visibility and the need for a rapid response in the face of shock reduces incentives (and constrains the time) for infighting. But this is not ideal: an urban system should not have to experience a shock to get optimally collaborative solutions from the Bank Group.

All these factors are limiting the Bank Group’s ability to identify and learn from various approaches to building urban resilience across GPs and institutions, and to assess progress against its corporate resilience goals.

## Evaluation Framework

The purpose of this evaluation was to provide evaluative insights on “how, and to what extent, the Bank Group is supporting clients to foster urban resilience in the face of shocks, threats, and chronic stress.

In the absence of an institutional process to benchmark and track urban resilience aims, IEG built on internal knowledge and the external literature to develop a two-part framework for assessing urban resilience at the operational and urban systems levels (figure 1.2).

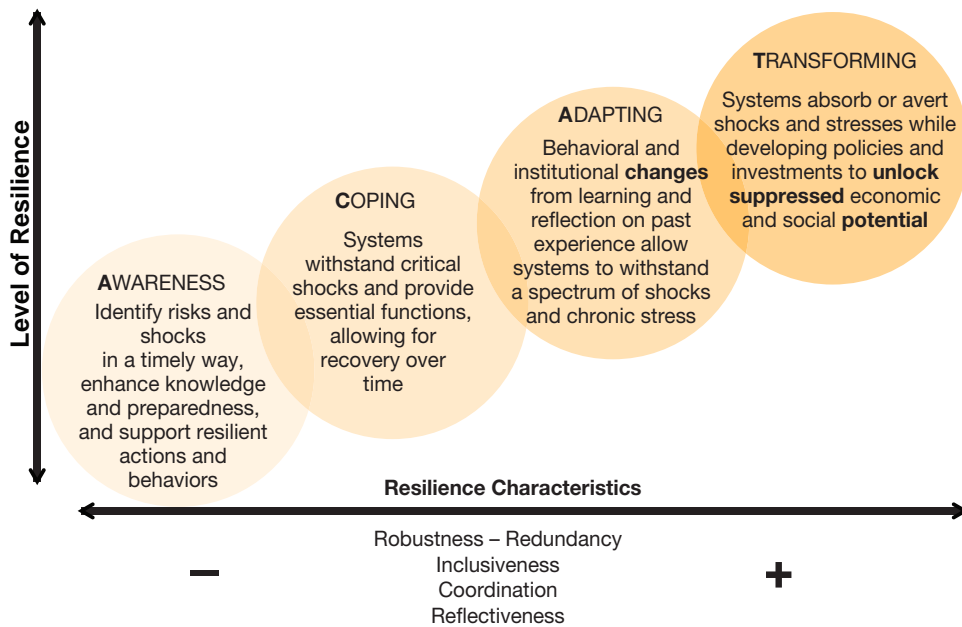
First, at the operational level, the evaluation framework uses five *resilience characteristics* empirically derived from the literature on resilience and urban systems to assess their relative incorporation in projects in urban areas across three key GPs (Social, Urban, Rural, and Resilience; Transport; Water). The characteristics are

- **Robustness:** The integrity and strength of infrastructure and an urban system, in relation to design standard in line with identified resilience risks; reliability and the ability of a system to absorb and withstand disturbances.
- **Inclusion:** Equity in access to infrastructure and services, especially for the most vulnerable. It underpins quality of life and access to opportunities and affects the cohesion of an urban society; it includes social, spatial, and economic dimensions.
- **Redundancy:** Spare capacity or backup systems that enable continuity of service in the event of a shock.
- **Coordination and Reflectiveness:** Factors strongly linked by the need to share knowledge: Coordination among agencies and systems includes knowledge sharing, and collaborative and strategic planning that enhances preparedness and interoperational responses. Reflectiveness is present in urban systems that examine, learn, and evolve based on shared knowledge and experience.

Second, at the urban system level, the evaluation framework used a model to assess the Bank Group’s contribution to building urban resilience along a continuum. The stages of the continuum include the following:

- **Awareness raising** at several levels within an urban system to identify risks and shocks in a timely way, enhance knowledge and preparedness, and support resilient actions and behaviors.
- **Coping** systems and their composite parts can withstand shocks and provide essential functions, allowing for recovery over time.

FIGURE 1.2 | A Systems-Level Urban Resilience Framework: A Continuum Driven by Resilience Characteristics



Source: Independent Evaluation Group.

- **Adapting** systemic shifts (both institutional and within the built environment) linked to learning and reflection on past experiences that allow an urban system and its composite parts to absorb and withstand a spectrum of shocks and chronic stress, while maintaining essential functions and enabling swift recovery.
- **Transforming** policies and investments are adapted so that an urban system can absorb or avert shocks and stresses while developing. Transformative behavior unlocks suppressed economic and social potential, including multiuse infrastructure, risk-sensitive land use planning, and cohesive social policies that are not obtained through a business-as-usual approach.

## Evaluation Methodology

### At the Operational Level

At the operational level, the evaluation used several methods to assess the integration of urban resilience in projects (see appendix A and appendix B). This included a portfolio analysis of projects approved during two periods (FY07–09 and FY15–17) and implemented in urban areas by three key GPs: Social, Urban, Rural, and Resilience; Water; and Transport. The three GPs were chosen based on their relative volumes of urban lending and their “footprint” on the built environment. As part of this portfolio review process, the evaluation included an analysis of the integration of urban resilience risks

in cost-benefit analysis and a human resource mapping exercise. To gain further operational insights, the evaluation also commissioned background papers on Bank Group financing sources for urban resilience and on the World Bank's approaches to urban crime and violence. The evaluation also conducted a staff survey and Bank Group staff interviews.

### Portfolio Analysis

Due to the evolving nature of urban resilience interventions in the World Bank, IEG conducted a design analysis of the most recently approved (FY15–17) projects implemented in urban areas by the three key GPs. The evaluation identified 147 relevant projects approved during this period. The analysis was designed to benchmark the current level of integration of resilience characteristics in these projects prior to midterm, to support timely learning and adaptive management.

Within the GPs, projects being implemented in urban areas are mapped to the following sectors: (i) urban water and sanitation; (ii) flood and drought projects implemented by both the Water and Social, Urban, Rural, and Resilience (SURR) GPs; (iii) housing and informal settlements; (iv) urban upgrading; (v) urban transport being managed by the Transport and SURR GPs; and (vi) urban roads and highways being managed by the Transport GP.

The design analysis also included a human resource mapping exercise that identified and compared the skill composition of project team members (including consultants). For each project, the entire project team was identified, along with metadata on their roles, job titles, skills, and so on, to map them into different skill categories. The source of the data for the project team was the Operations Portal. The exercise mapped the relative intensity of skill use and the relative extent of skill use, that is, the ratio of projects that use a skill relative to all projects in the typology, across GPs.

To understand the World Bank's evolving approach to urban resilience, the evaluation also undertook a comparative analysis of all projects approved between FY07 and FY09 and implemented in urban areas by the same three GPs. The evaluation identified "like" projects by mapping the GP, sector, and theme, and by comparing component activities. The evaluation identified 88 relevant projects that were approved during this period.

As part of the design and comparative analyses, the evaluation undertook an assessment of the incorporation of urban resilience risks in cost-benefit analysis. This exercise was undertaken as part of the robustness analysis and was designed to track this relative level of integration across the key sectors reviewed, over time.

For the design, comparative, and cost-benefit analysis, the evaluation used the project appraisal document or project paper as the key unit of analysis, since these are the basis for self-evaluation and evaluation in the World Bank, and they inform the legal agreement.

As agreed in the approach paper, this evaluation does not include a portfolio review of resilience characteristics in IFC operations. Instead, it analyzes the contribution of IFC's investment and advisory activities in its engagements with strategic cities (see section on the evaluation's systems-level analysis). The evaluation also conducted an analysis of IFC's Rockefeller Partnership that supports resilience in its operations.

## Background Papers

The evaluation commissioned a review of funding sources linked to World Bank projects implemented in urban areas across the three key GPs (FY15–17); GFDRR financing for urban resilience; and financing sources for the City Resilience Program. The evaluation also commissioned a background paper on crime and violence Advisory Services and Analytics and World Bank operations.

## At the Urban System Level

### City Case Studies

At the urban system level, the evaluation developed a model to assess the Bank Group’s contribution to building resilience within cities along a continuum (awareness raising, coping, adapting, and transforming). The systems-level analysis adapts theories derived from the urban resilience literature (sourced from the World Bank, the Arup Group, Organisation for Economic Co-operation and Development, and the Overseas Development Institute)<sup>1</sup> and the experience of the evaluation assessment. This model was applied to nine city case studies (see appendix A).

To select the cities, the evaluation identified four different organizational approaches, or “entry points,” to resilience building across cities experiencing diverse chronic stresses. The four approaches, though not mutually exclusive, presented an opportunity to assess the range of ways in which the Bank Group is engaging with clients to support urban resilience building at the system level. The four approaches are

- i. The City Strength Diagnostic (CSD):** enables multisectoral collaboration and has been piloted in Can Tho, Accra, Addis Ababa, and several secondary cities in Ethiopia.
- ii. Sector-led programmatic approaches:** are often triggered by a shock or stressor but are used to build a long-term strategic engagement to address chronic stresses and the drivers of shock, often over phases. City case examples include the World Bank’s support for the Transmilenio system in Bogotá that addresses such chronic stresses as congestion, social exclusion, and pollution; flood mitigation in Chongqing and Manila; and seismic risk in Istanbul (that occurred through a protracted country engagement on seismic risk, but through one project cycle at the city level).
- iii. Sector-led “no-regrets” approaches:** “just-in-time,” pragmatic, and technically oriented solutions to a shock or chronic stress, which often do not allow a more programmatic approach in the short term because of political, fiscal, or capacity constraints. Case examples include flood mitigation in Cap-Haïtien and disaster relief efforts after a major earthquake in Port-au-Prince.
- iv. IFC-led approaches:** as agreed at the approach stage, IFC’s Cities Initiative—which seeks to improve the strategic alignment of upstream dialogue, advisory services, and investments in urban areas—offers the potential to contribute to urban resilience. A case study was conducted of the flagship program in Izmir. Interviews with municipal and IFC stakeholders were also conducted in Cape Town, Cartagena, and Durban.

To conduct the city case studies, the evaluation assembled all the analytical and investment projects relevant for the identified city under review. While the review included all projects approved during the evaluation period, the city case studies also included projects approved before the evaluation period

to capture lessons from programmatic approaches, where relevant. While the focus of these reviews included support from the three key GPs referred to in the portfolio analysis, support from other GPs and IFC was also assessed, where relevant (for example, Environment and Natural Resources, Governance, and so on).

Urban systems exhibit properties and behaviors that differ from their constituent parts for each of the cities selected. For each city, IEG identified leverage points—key incidents, institutional shifts, or individual decisions—within an urban system that affect the way a system or its composite parts behave and which, if changed, can have transformative effects. It assessed how the World Bank’s interventions were enabled or constrained by activities aimed at transforming system behavior by targeting leverage points. Through a review of evaluative evidence, interviews, and site visits, IEG assessed the level at which the World Bank’s contribution is influencing system behavior, across phases.

### Review of Strategy and Analytical Work

To strengthen the analysis of the Bank Group’s support for urban resilience at the system level, the evaluation commissioned a review of the World Bank’s flagship urban analytical product, Urbanization Reviews. It also commissioned an analysis of urban resilience themes in Systematic Country Diagnostics (SCDs) and Country Partnership Frameworks.

### Methodological Limitations

Urban resilience is complex and takes time to materialize; consequently, assessing causal contribution (from the Bank Group to changes in the urban system) becomes much more challenging. The case-based information offers insights on how different approaches have contributed to incremental changes within an urban system, using the awareness, coping, adapting, and transforming (ACAT) model, but attribution is difficult. There are limitations in generalizability, especially in the case-based approach. Analysis of the CSD approach covered the population of cities; other entry points should not be considered representative but illustrative of different approaches identified.

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<sup>1</sup> The model was adapted from theories and terms developed and explained in the Organisation for Economic Co-operation and Development’s (OECD’s) 2014 *Guidelines for Resilience Systems Analysis*. See also ODI and World Bank (2015); World Bank (2014a); Rockefeller Foundation (2014); and Meerow, Newell, and Stults (2016).



# 2

## Operationalizing Urban Resilience in the World Bank Group

### highlights



There has been increasing integration of resilience characteristics in operations implemented in urban areas by the Social, Urban, Rural, and Resilience; Transport; and Water Global Practices during the evaluation period. However, there is inconsistent reference to these characteristics within sectors and among GPs financing the same activities. Factors driving design and risk analysis in projects are associated with skill mix and team composition, and this is leading to differentiated solutions that may not be optimal from a resilience perspective.



**Robustness.** Since 2007, projects increasingly refer to design standards in line with resilience risks (for example, flood protection standards, building codes), but references are uneven. Projects are increasingly indicating how infrastructure is adjusted to mitigate resilience risks, but not the degree of risk tolerance. The identification of resilience risks, as integral to a project's economic analysis, has risen over the two periods: from 49 percent to 68 percent of projects assessed. However, the incorporation of risks into cost-benefit analysis

has not been proportional, rising from 30 percent to 37 percent over the same period.



**Inclusion.** Across the three key Global Practices, there has been enhanced poverty targeting and increased gender integration in design. But many projects that cite risks associated with certain excluded, vulnerable groups do not support them as part of project design.



**Urban crime and violence.** This is a significant part of the inclusion and fragility, conflict, and violence agenda in rapidly urbanizing cities. The World Bank has built client capacity in Latin America through analyses and technical assistance, including by identifying drivers and costs. Participatory, multisector approaches that adapt the built environment and target at-risk groups resulted in perceptions of increased safety. There is a need to indicate how the World Bank will support clients' demands for violence prevention activities, outside of the Latin American region, as part of the expanding urban resilience agenda.



**Coordination.** At the country level, the coordination of urban-focused activities is essential for building resilience at the urban system level. New exchanges combining skills across Global Practices can amplify resilience outcomes, including between Disaster Risk Management, Social Protection, and Jobs. Better coordination is needed between land and urban specialists, and for increased support for interagency and interjurisdictional coordination.



**Reflectiveness.** The World Bank has increasingly supported advanced data collection and analysis tools, including remote sensing and geospatial applications for decision-making within urban systems. Information exchanges show evidence of uptake and learning.



**Redundancy.** This factor is desirable but not always achievable, due to the low level of development in many cities. Few projects finance redundancy, apart from Disaster Risk Management projects, which has occurred alongside a shift from recovery to preparedness operations.

## Urban Resilience at the Operational Level

This chapter presents the findings of a portfolio review of 235 closed and active operations implemented in urban areas (FY07–09; FY15–17) by the SURR, Water, and Transport GPs.<sup>1</sup> The portfolio analysis was conducted at the subsector level and includes an analysis and comparison of investments in (i) flood and drought, (ii) water and sanitation, (iii) public transport, (iv) roads and highways, (v) urban upgrading, and (vi) housing and informal settlement.

The portfolio review included an analysis of the relative level of integration of resilience characteristics within World Bank projects. As outlined in the methodology section in chapter 1, these five characteristics, empirically derived from the literature on resilience and urban systems, are robustness, inclusiveness, redundancy, coordination, and reflectiveness. The unit of analysis for the portfolio review is the project appraisal document because it informs the legal agreement and is the basis for self-evaluation and evaluation within the World Bank. The characteristics are used as proxies to infer the likelihood that projects can achieve and report on resilience outcomes, while recognizing that resilience outcomes are nonlinear.

The evaluation recognizes that cities are complex systems: the resilience of a system depends on the effective functioning and coordination of its constituent parts. Focusing on isolated characteristics can lead to undesirable outcomes. For example, addressing the robustness of critical infrastructure in the absence of a socially inclusive approach can undermine resilience. Redundancy is also strongly linked to robustness: an urban system cannot provide for redundancy if it is not robust. Likewise, coordination and reflectiveness are linked by the need to share knowledge and make informed decisions to address chronic stresses and shocks.

The portfolio review also included an analysis of (i) resilience risks in cost-benefit analysis and (ii) a human resource mapping exercise. To gain further operational insights, the evaluation conducted (iii) a staff survey, (iv) interviews, and commissioned (v) two background papers on financing sources for urban resilience and World Bank approaches to addressing crime and violence.

## Portfolio Review Findings

There has been a significant increase in the integration of resilience characteristics in operations mapped to the SURR, Transport; and Water GPs, between the two assessed periods (FY07–09 and FY15–17). However, there is inconsistent application of resilience characteristics in projects within and among GPs financing the same type of activities (such as urban flood protection and urban transport infrastructure), which may be leading to suboptimal client solutions from a resilience perspective.

### Robustness

Robustness is associated with the reliability, integrity, and strength of an urban system and its composite parts to overcome chronic stresses and absorb and withstand shocks. This evaluation measures the contribution of World Bank activities to building robustness—as articulated in project design—by reviewing: (i) references to design standards in line with resilience risks, (ii) financing

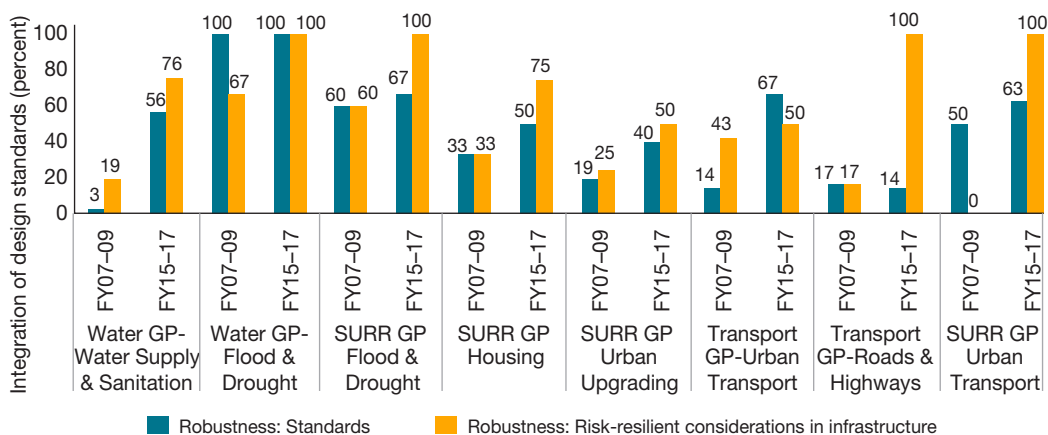
for asset management, (iii) risk-sensitive land use planning, and (iv) the incorporation of resilience risks into cost-benefit analyses. Institutional robustness also includes the strength of an agency: its financial capacity, decision-making, knowledge sharing, and planning capabilities.<sup>2</sup>

### Design Standards in Line with Resilience Risks and the Integration of Resilience Risk Considerations in Project Design

The articulation of design standards in line with resilience risks in World Bank project appraisal documents has strongly improved for most sectors, but discrepancies remain within and among GPs, especially for projects that are financing similar operations (figure 2.1). It is not possible to infer whether infrastructure investments, or the composite parts of an urban system, will be resilient in the face of stresses and shocks without understanding their level of risk tolerance. Examples of design standards that have been developed in line with resilience risks include flood protection standards, seismic and building codes, road construction standards, water quality standards, health and safety, and so on.

In the absence of an articulation of design standards in line with resilience risks, projects are increasingly indicating how infrastructure design will be adapted in consideration of these risks (figure 2.1). There are illustrative examples, across sectors, of how resilience risk considerations are factored into project design. In Ho Chi Minh City, the World Bank is helping to elevate a wastewater treatment plant and adding nonreturn valves to drainage outlets in response to an assessment of flood risks. In Nepal, urban housing interventions are using earthquake-resistant materials and techniques. In Bangladesh, slum upgrading interventions include drainage infrastructure at the household level to mitigate flood risks. In Georgia, the World Bank is helping to adjust road design in

FIGURE 2.1 | Integration of Design Standards in Line with Resilience Risks and Risk Considerations in Infrastructure Design in Projects in Urban Areas, FY07–09 and FY15–17



Source: Independent Evaluation Group.

Note: GP = Global Practice; SURR = Social, Urban, Rural, and Resilience (GP).

line with a climate risk assessment, which will reduce erosion, rock falls, and landslides and minimize disruption to local communities.

However, in key dimensions of urban resilience, GPs financing the same types of investments have inconsistent references to resilient characteristics (for example, design standards in line with resilient risks, socially inclusive approaches) and this is leading to differentiated solutions that may not be optimal for the client from a resilience perspective.<sup>3</sup> This occurs most frequently in flood protection projects and urban transport infrastructure projects that are being implemented across GPs.

### Urban Flood Protection

All urban flood projects implemented by the Water GP include references to flood protection standards and their magnitude of risk tolerance, and often indicate how they will be augmented. In contrast, just over one-third of urban flood projects implemented by the SURR GP refer to flood protection standards, and these references declined during the two periods assessed. At the same time, SURR GP urban flood projects invested five times more than the Water GP in institution and system strengthening, through technical assistance components, due in part to the fact that these projects are in low-income states.

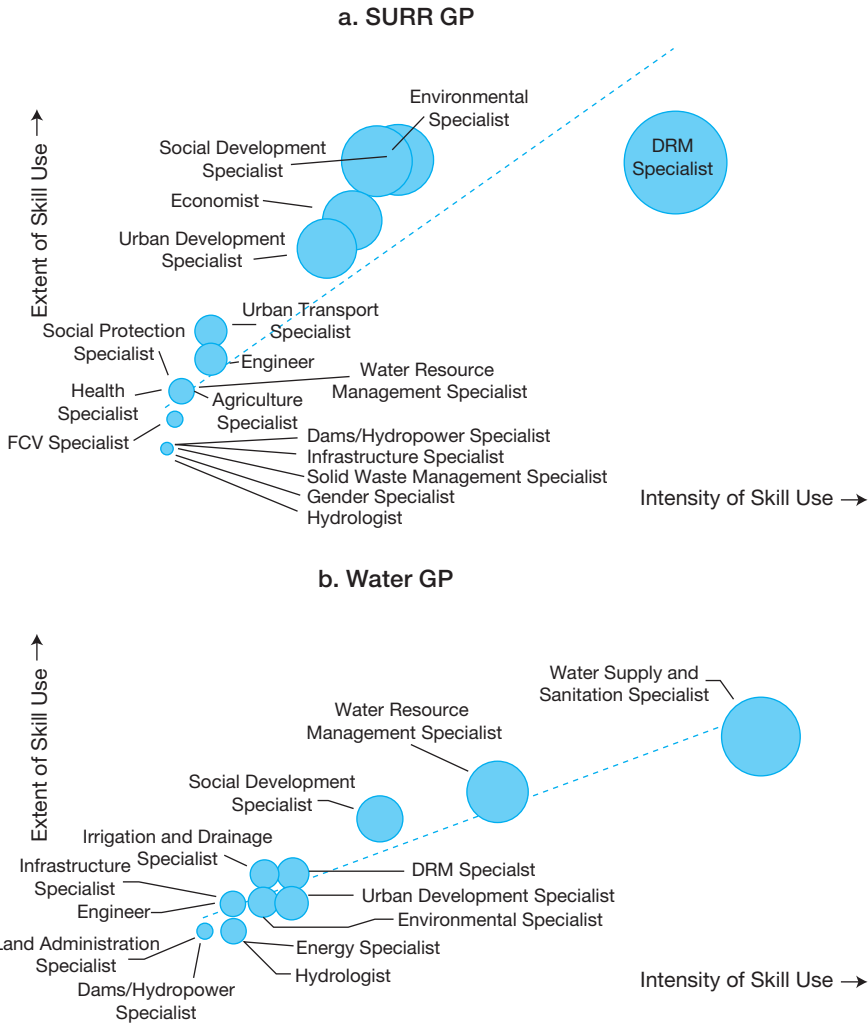
Bank Group client cities have varying levels of flood management capacity, and so may require a differentiated project approach to resilience. However, factors driving the design of, and risk assessment in, flood protection projects appear to be linked to the skill mix and team staff composition of the GP in charge of the project (figure 2.2, also see appendix A). A client is likely to get a very different flood protection project depending on the GP with which they are working. For example, SURR flood projects compared with Water flood projects, include twice the unique skills and finance more inclusive activities (see Inclusion section below). And, as indicated, SURR flood projects less often (in 38 percent of projects) articulate flood protection standards (figure 2.2).

### URBAN WATER AND SANITATION

Urban water and sanitation projects insufficiently refer to design standards in line with resilience risks (for example, climatic, meteorological, seismic, geomorphological); however, this has dramatically improved over time (figure 2.1). Many projects refer to alignment with a city master plan, or municipal standards and guidelines, but the resilience risk threshold is not known. Water quality projects that include targets for pollution reduction in line with environmental and human health standards are the exception. Examples include projects in Guayaquil and Hebron that set targets in line with regulatory standards and that are tracked routinely through water quality monitoring systems. Other projects in Qinghai and Lusaka report on effluent reduction, but not against regulatory benchmarks, making the relative resilience of the water supply uncertain. Overall, the infrastructure financed in water quality projects (for example, water treatment plants) lacks references to design standards in line with resilience risks.

Many urban water supply and sanitation projects refer to a tracking system that has the potential to report on levels of resilience, but project reporting is not taking advantage of the opportunity. Recently approved urban water supply and sanitation projects use the World Health Organization/ United Nations Children's Fund service ladders from its Joint Monitoring Program for Water Supply,

**FIGURE 2.2 | Skills Compositions in Urban Flood and Drought Projects Implemented by the Social, Urban, Rural, and Resilience and Water GPs (Approved in FY15–17)**



Source: Independent Evaluation Group.

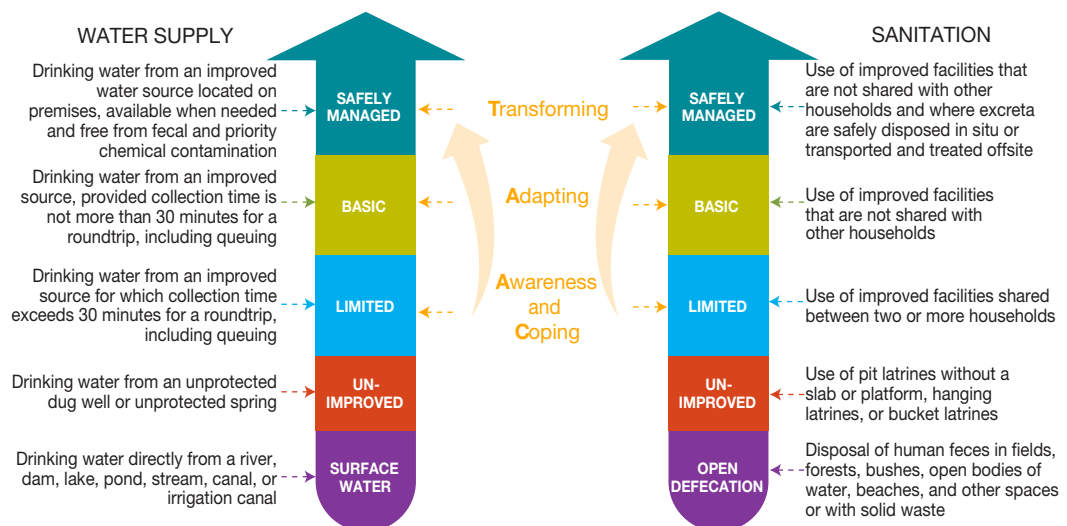
Note: The phrase “Intensity of skill use” on the x-axis refers to how many unique project team members with a specific skill worked on a project. The y-axis represents the ratio of projects that use a skill relative to all projects in the typology. The size of the circle is the number of times a skill was used in a typology. The trendline is the average relationship between intensity and extent of skill use in the typology. Skills to the right of this trendline have a lower extent of use compared with their intensity of skill use. GP = Global Practice; SURR = Social, Urban, Rural, and Resilience.

Sanitation and Hygiene (figure 2.3).<sup>4</sup> World Bank–financed urban water and sanitation projects use the service ladder terminology in their results frameworks (that is, “improved water sources”). However, the results frameworks fall short of using these service ladders to specify baselines and to set targets. The service ladder presents projects with an opportunity to track the sector’s contribution to urban resilience across a continuum. For example, a city’s urban sanitation system may be barely coping when its water is “unimproved,” and transformed when it is “safely managed.” But this needs to be articulated in project design.

### URBAN TRANSPORT INFRASTRUCTURE

The World Bank’s urban transport portfolio,<sup>5</sup> mapped to the Transport GP, lacks systematic references to design standards in line with resilience risks. Few project appraisal documents refer to design standards in line with multihazard and disaster risks. Most urban transport projects only reference one type of standard even though they deal with multiple urban system interventions and associated risks. Most bus rapid transit (BRT) projects indicate that they will comply with the World Bank’s *BRT Accessibility Guidelines (2007)*, but they do not specify design standards in line with resilience risks for the infrastructure construction (for example, seismic, flooding, economic displacement). Safety measures are an integral part of mitigating social risks, but only one project, in Tianjin, refers to the use of the International Road Assessment Program. Although the assessment program is a methodology, not a standard, it is used to conduct road condition assessments, identify major risks for safety of different road users, propose star rating for safety of the surveyed roads, and

FIGURE 2.3 | Aligning the WHO/UNICEF Joint Monitoring Program for Water Supply, Sanitation, and Hygiene Standards with the ACAT Model



Source: Independent Evaluation Group.

Note: ACAT = awareness, coping, adapting, and transforming; WHO = World Health Organization; UNICEF = United Nations Children’s Fund.



develop investment plans with mitigation measures. Projects in Chinese and African cities often do not include a reference to design standards in line with resilience risks.

Urban roads and highways projects mapped to the Transport GP do not reference design standards in line with resilience risks in the project appraisal documents,<sup>6</sup> but they do indicate that disaster risks will be managed as part of engineering designs. Though the climate risk screening tool is rarely mentioned, urban road and highway projects refer to World Bank–financed vulnerability assessments and to plans to integrate mitigation measures. However, there is only one reference to road safety—a key social risk—in this assessed portfolio (in Addis Ababa).

Half of the urban transport infrastructure supported by the SURR GP include references to design standards in line with resilience risks. These mostly occur in projects in small island states (cyclone and seismic risks). However, urban transport infrastructure projects with multiple components often only refer to one standard for one part of the project (for example, for the road component, but not for drainage).

#### ASSET MANAGEMENT

World Bank support for infrastructure asset management increased during the two periods assessed. However, apart from the support provided by SURR, this has mainly occurred at the sector level. Many developing cities do not have adequate asset inventory, management, and planning for preventative maintenance. Half of SURR’s urban upgrading projects finance asset management and include comprehensive urban infrastructure coverage (roads, drainage, water supply and wastewater, solid waste management, energy efficiency, and so on). They also employ diverse mechanisms (such as land use analysis, spatial planning, participatory capital investment plans, and infrastructure mapping). Asset management is also supported by the Water and Transport GPs, but this tends to occur less frequently and only at the sector level.

#### RISK-SENSITIVE LAND USE PLANNING

Risk-sensitive land use planning guides the location, type, density, and timing of development through regulations, investments, market incentives, and the conservation of natural resources so that it is resilient from shocks. This includes three basic principles: (i) safe location, to reduce existing risks and prevent new risks linked to infrastructure placement; (ii) safe construction, to reduce and prevent risks from poor design or infrastructure construction; and (iii) safe activities, to reduce and prevent risks created by specific land uses and economic activities (UFCOP 2017).

Urban flood projects almost always articulate the way that projects use risk-sensitive land use planning. Water GP flood projects universally articulate how risk-sensitive land use analysis is used to support the “safe” location and construction of activities in flood-prone areas, and this has been consistent over time. A best practice example is the way that land use decisions are taken in and around Vinh Phuc with the use of numeric hydrodynamic models to conduct flood risk assessments and to verify design scenarios. SURR flood projects describe undertaking risk-sensitive land use analysis and planning in two-thirds of the cases assessed. There is often an explanation of how projects will ensure safe construction. SURR also provides technical assistance that seeks to mainstream disaster and climate resilience into municipal land use planning, budgeting, and investment considerations.

There are also good practice examples linked to SURR’s transport infrastructure portfolio. The Belize Climate Resilience Infrastructure Project provides technical assistance for improved land use and territorial planning with the use of geospatial information and open-source technology. It supports hazard mapping and disaster-informed decision-making for the development of a new land use policy framework.

### Integration of Resilience Risks in Cost-Benefit Analyses

In 2013, the World Bank made explicit the need to integrate risk assessment and cost-benefit analysis within a dynamic decision-making process in urban investments. This evaluation found that, for projects implemented in urban areas by the three key GPs included in the portfolio review, the identification of resilience risks, as integral to a project’s economic analysis, has risen over the two periods. It rose from 49 percent of projects assessed in FY07–09 to 68 percent in FY15–17. However, the incorporation of risks into cost-benefit analysis has not been proportional, rising from 30 percent to 37 percent over the same period (see appendix A, appendix B, and box 2.1). The underestimation



#### Box 2.1 | Integration of Resilience Risks into Project Cost-Benefit Analysis

A quantitative assessment of the robustness characteristic requires identifying hazards and incorporating them into the flow of benefits and costs used to determine the feasibility of projects (World Bank 2016b). The integration of resilience risks into cost-benefit analysis, beyond sensitivity analysis is in line with client expectations to be able to assess potential damage to its urban system, to accurately estimate costs, to align investments with a desired level of protection, and to manage trade-offs. There are several positive examples of how resilience risk considerations can be integrated into cost-benefit analysis.

The Belize Climate-Resilient Infrastructure Project combines traditional cost-benefit analysis with probabilities of asset failure under different climate change scenarios. The economic analysis methodology includes an analysis of disruptions associated with natural hazards and anticipated climate trends, and the agency and user costs associated with these disruptions.

In Can Tho, a “triple dividend framework” is used to analyze costs and potential resilience dividends. The triple dividend of resilience refers to (i) avoiding losses when disasters strike; (ii) stimulating economic activity thanks to reduced disaster risk; and (iii) development co-benefits, or uses, of a specific disaster risk management investment. Costs and benefits are weighted against (i) averted losses; ii) the potential for increased investments because of enhanced economic confidence from disaster safeguards; and iii) co-benefits, realized in multipurpose infrastructure.

*Source:* Cost-benefit analysis in project appraisal documents, and Independent Evaluation Group.

of costs and the overestimation of benefits may produce an inaccurate assessment of project viability from a resilience perspective.

## Inclusion

This evaluation uses the World Bank's definition of social inclusion, as presented in the flagship report, *Inclusion Matters*. It defines social inclusion as the process of improving the ability, opportunity and dignity of people disadvantaged based on their identity to take part in society (World Bank 2013c, xxiv). The group identities most commonly experiencing exclusion are gender, race, caste, ethnicity, religion, and disability status. In resilient urban planning, excluded groups should be given a role in decision-making, to ensure that the risks they face are identified and addressed. Many policies and planning initiatives ignore the economic, social, and cultural contributions of low-income urban areas. This is made more challenging by the low visibility of the informal sector in urban planning and policy processes; sometimes because informal dwellers calculate and evade the risks of "being counted."

During the evaluation period, poverty targeting and gender-informed design have increased in the urban projects assessed, owing, in part, to the corporate mandate. Nevertheless, many projects that cite risks associated with certain excluded, vulnerable groups do not provide dedicated support for them as part of project design, including for the elderly, youth, and persons with disabilities (see appendix A).<sup>7</sup> For example, while the elderly and persons with disabilities were referenced as being at risk in 41 percent of the project appraisal documents examined, only 18 percent and 25 percent of projects, respectively, financed dedicated activities for these group identities. Likewise, only one-half of the projects that referenced the vulnerability of minorities and migrants or displaced persons included dedicated financing for these specific groups (see table 2.1).

### Gender Inclusion in Urban Areas

Financing for gender-informed activities has increased significantly across all sectors analyzed, owing, in part, to the World Bank's corporate mandate (figure 2.4).<sup>8</sup> There are strong improvements in urban transport projects managed by both the Transport and SURR GPs, and notable improvements in flood protection projects, supported by both the Water and SURR GPs. All but one of SURR's urban flood projects finance dedicated activities for gender, and three-quarters of those include indicators to track gender benefits (beyond participation). The Water GP flood projects finance targeted gender activities in 71 percent of its projects. Urban Transport, by applying the World Bank's universal access standards, includes gender-targeted activities in 65 percent of its projects, a significant increase from the 28 percent during the previous period (see appendix A for full data set).

### Persons with Disabilities and the Elderly

Many excluded groups, including persons with disabilities and the elderly, are being neglected in project design. While there is improvement across the portfolio analyzed, progress is slow, and the level of dedicated financing for these groups is far from sufficient (figure 2.5). Neither the Water GP's urban flood nor the SURR GP's urban upgrading portfolio, for both periods, financed dedicated services for persons with disabilities or the elderly. Likewise, there are no references to persons with disabilities in the Transport GP's urban roads and highways portfolio. Better-performing sectors, especially in relation to past performance, include the Transport GP's urban transport portfolio,

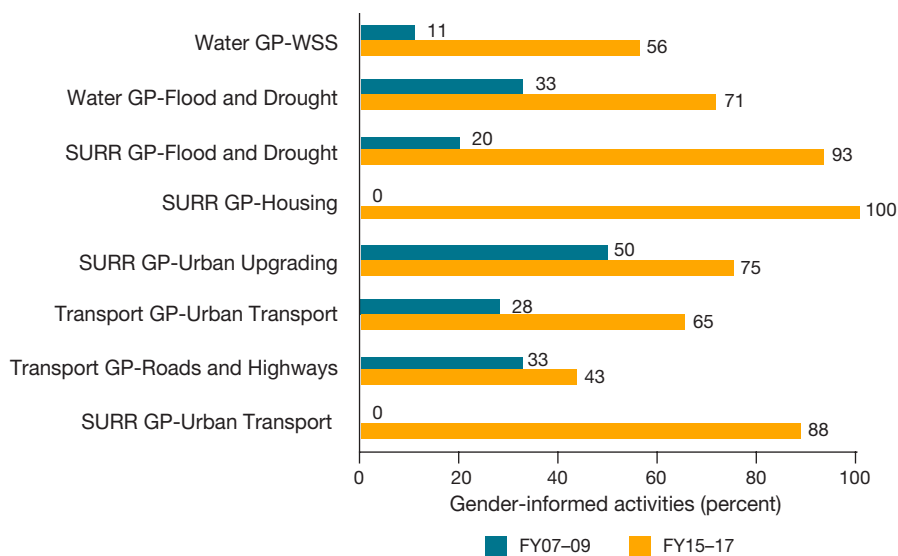
TABLE 2.1 | Social Inclusion in Water, Transport, and SURR Projects in Urban Areas (percent)

Specific Vulnerable Group Referenced in the PAD	Group Acknowledged to be Vulnerable in the PAD	Dedicated Financed Activity in Support of the Specific Vulnerable Group Referenced in the PAD
Gender	94	71
Elderly	41	18
Persons with Disabilities	41	25
Youth/Children	64	34
Minorities	21	12
Displaced/Migrants	32	15

Source: Independent Evaluation Group.

Note: Approved in FY15–17, n = 102. PAD = project appraisal document; SURR = Social, Urban, Rural, and Resilience.

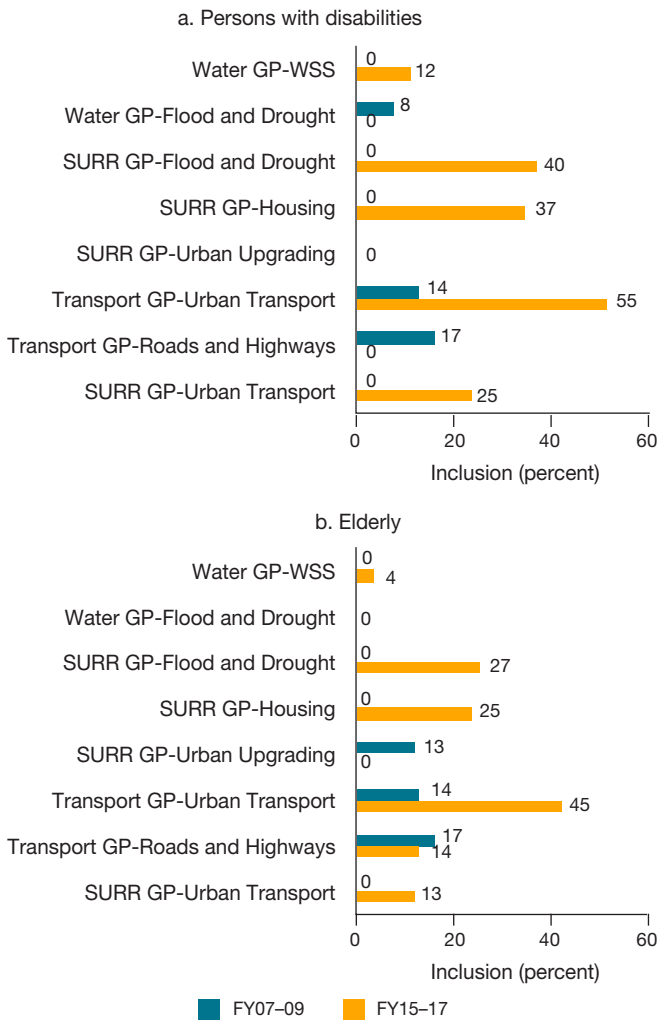
FIGURE 2.4 | Gender-Informed Activities in Projects in Urban Areas, FY07–09 and FY15–17



Source: Independent Evaluation Group 2018.

Note: GP = Global Practice; SURR = Social, Urban, Rural, and Resilience; WSS = water supply and sanitation.

FIGURE 2.5 | Inclusion (Persons with Disabilities and the Elderly) Activities in Projects in Urban Areas, FY07–09 and FY15–17



Source: Independent Evaluation Group.

Note: GP = Global Practice; SURR = Social, Urban, Rural, and Resilience; WSS = water supply and sanitation.

which has strengthened its attention to social inclusion since the time of IEG’s last urban transport evaluation (World Bank 2017g).

The World Bank made a series of commitments at the July 2018 Global Disability Summit to increase support for persons with disabilities in its lending operations across several sectors. Among these are commitments to ensure that, by 2020 and 2025, respectively, all public facilities in disaster risk management (DRM) projects, and all urban transport projects, are disability inclusive. More than one billion people worldwide—including an estimated 800 million in developing countries—experience

some form of disability, according to the World Report on Disability (World Bank and WHO 2011). From an urban resilience perspective, persons with disabilities suffer disproportionality because systems are ill-equipped to support critically needed mobility in the face of sudden shocks and stresses.

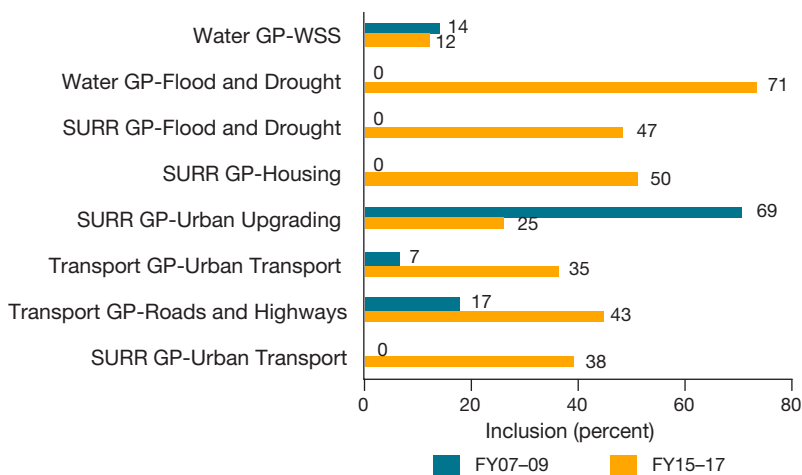
### Youth Inclusion

Youth are treated unequally across the portfolio, suggesting missed opportunities to engage them in urban resilience strengthening activities, globally. Though the Water GP flood portfolio does not target persons with disabilities or the elderly, it does target youth in 71 percent of projects, representing a strong increase from the prior period. SURR’s flood portfolio targets youth in half of its projects, as compared with none during the prior period. However, across the whole portfolio and across the evaluation time frame, attention to youth is inconsistent (see figure 2.6).

### Addressing Urban Crime and Violence through Inclusive Engagement of Local Communities and Youth

Urban violence occurs more frequently in rapidly growing, unmanaged cities; it is also most prevalent in the poorest parts of a city (World Bank 2011d; Winton 2004; Briceno-Leon and Zubillaga 2002). Crime and violence can undermine the resilience of a city because elevated insecurity dampens investment, which in turn leads to increased inequality. Or, in some cases, perpetrators of crime and violence invest in and govern informal areas, sometimes even providing basic services, which can worsen the isolation from other parts of the city (Verner and Heinemann 2006; World Bank 2011d; 2011e). These areas are often barely coping and are vulnerable to shocks. Each year about 470,000 people die, and hundreds of millions more are nonfatally injured, because of violence (WHO 2017). Not all victims of violence live in urban areas, but violence rates in cities can be much higher than those in rural areas (McEvoy and Hideg 2018).

FIGURE 2.6 | Inclusion (Children or Youth) Activities in Projects in Urban Areas, FY07–09 and FY15–17



Source: IEG 2018.

Note: GP = Global Practice; SURR = Social, Urban, Rural, and Resilience; WSS = water supply and sanitation.

## ANALYTICAL SUPPORT AND CAPACITY BUILDING

The World Bank has been a leader, and has a comparative advantage in, analytical work and capacity building activities on crime and violence, such as by helping clients identify the underlying drivers and economic costs of violence. The work is linked to its fragility, conflict, and violence agenda, because conflict is increasingly becoming urbanized. Beginning in the 1990s, the World Bank's analytical work has consistently focused on how rapid rates of unplanned city growth lead to the expansion of low-income neighborhoods characterized by reduced access to services and insecurity. The work has shown how exclusion and inequality, and frustration over lack of services, reduce trust, which, coupled with an absence of state presence, can increase crime and violence. Affected neighborhoods have limited economic opportunities, because the security risks in these areas deter investment. Residents find it difficult to work in other parts of the city, because employers discriminate against those living in violent areas, transportation may be limited or unsafe and travel costs prohibitive.

The World Bank's analysis and tool kits on crime and violence have been used extensively by clients and partners operating in this field. Some of the World Bank's analytical work has increased awareness about the prevalence of young people as both perpetrators and victims, and this awareness is reflected in the evolution of project design. For example, earlier analysis portrays youth as being "affected by" violence—in other words, living in violent neighborhoods leads young people to become involved in gang violence or the drug trade, or to solve conflicts with guns (McNeil 1993). Or it suggests that exclusion and a search for identity lead to youth participation in violence (Barker and Ricardo 2006). More recent analysis links youth unemployment to increases in urban crime and violence (Cities Alliance 2012); however, other analytical work suggests that the empirical evidence to support such a link is weak (World Bank 2011d). Elsewhere, an accumulation of risk factors, including unemployment, exclusion, lack of education, and others, are cited as explanations for young people perpetrating violence (Filmer and Fox 2014; Hoyos, Rogers, and Szekely 2016).

## EVOLVING PROJECT APPROACHES TO REDUCING URBAN CRIME AND VIOLENCE

The World Bank has built the capacity of government agencies to implement urban crime and violence prevention approaches, through major technical assistance and capacity building programs in Brazil, Colombia, Honduras, Jamaica, and Mexico. For example, the World Bank has worked with cities and municipalities in Colombia and Brazil to identify and map hotspots and then, using that information, to plan and implement interventions based on an environmental design approach (for example, strategic street lighting and fencing).

The World Bank has also successfully implemented participatory, multisector initiatives, including changes to the built urban environment and the targeting of at-risk groups, which have led to perceptions of increased safety (see box 2.2). Operations in this field have pursued a consistent approach that has successfully combined the urban agenda with the violence prevention agenda, through an environmental design approach that is underpinned by understanding of context and that addresses the diverse risks facing communities, households, and individuals (including at-risk youth).

More recently, the World Bank has begun to test a more holistic approach that integrates urban upgrading, community-based violence prevention approaches, and youth inclusion. The 2014



## Box 2.2 | Crime Prevention through Environmental Design

The World Bank's support for the Barrio Ciudad in Honduras illustrates how mainstreaming principles of "Crime Prevention through Environmental Design" can increase perception of safety and support the enhanced resilience of communities. Through a participatory approach, the World Bank helped communities living in isolated, informal areas, without public services, and overwhelmed by crime and violence, to identify and make changes to their physical environment, including by installing public lighting, reducing hidden areas, and managing the number of entry and exit points in neighborhoods. Cofinancing from the Japanese Social Development Fund provided training to officials and community leaders on crime and violence. The results of an impact evaluation show that, overall, more residents of targeted neighborhoods felt safe when compared with control groups.

*Source:* Independent Evaluation Group.

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Jamaica Integrated Community Development project is a good example of this new holistic approach, which builds on lessons from the earlier crime and violence interventions assessed by IEG. In addition to addressing infrastructure and service gaps, it directly targets youth at risk through a "Violence Interrupter" program, focused on crisis management, trauma response, counseling, mediation, community outreach, and mobilization. To address the drivers of economic exclusion, it supports training and livelihood activities, promotes youth leadership, and encourages civic engagement. However, lessons demonstrate that to succeed, such innovations require adaptation at the school and neighborhood levels and they are, therefore, complex and challenging to implement. Preliminary results from the Mid-Term Review show that, so far, the project has not fulfilled expectations at the community level, and that activities are at risk of failing targets in most neighborhoods (Mid-Term Review, preliminary results presentation 2018). This review highlights the complexities of adopting more holistic design approaches to tackle system-level issues and is a theme that could be explored further as the projects mature.

There are also some consistent and relatively standardized approaches in World Bank projects to employ urban youth, which are reporting positive impacts on reducing violence. Most youth employment projects do not directly address crime and violence, but work with vulnerable and at-risk urban youth and include cash-for-work schemes. The projects that show the most positive results involve training (including training in socio-emotional skills) and have civic engagement or community development activities.

The World Bank's Income Support and Employability Project (2009) in El Salvador provides evidence of the potential impact of cash for work, combined with community engagement measures, on



reducing participation in crime and violence. That project provided temporary income support to the urban poor and aimed to improve the coverage of labor intermediation and training services and to enhance institutional capacity to develop an integrated social protection system. The project did not measure its impacts on violence, but a 2018 study found that the project had a robust and significant impact in reducing most types of crimes in municipalities where the intervention was implemented. Moreover, the effects of the program on reducing some types of crime have been sustained several years after participation. The study suggests that these results could derive from increased incomes disincentivizing economically motivated crimes, or from the community participation aspects of the project (Acosta and Monsalve Montiel 2018). Projects in El Salvador have also successfully introduced cultural and musical learning and networking activities that, according to an impact evaluation, show a decline in violent behavior of direct beneficiaries by 34 percent, which exceeded project targets.

Some interventions to reduce urban violence and crime have achieved their objectives; but the attribution of specific success factors (or combination of factors) is often unclear. Many of the projects evaluated monitor effects on violence by tracking perceptions, but such measures do not preclude external influences affecting perceptions that are outside the projects' control. Projects that have conducted impact evaluations show that these activities affect urban crime and violence levels and perceptions, but examples are limited and highly contextualized.

More recently, the World Bank has begun to expand its crime and violence reduction work beyond the Latin America and the Caribbean Region, where it has been focused since the 1990s. It will be important to understand how the World Bank intends to develop this work programmatically, with analytical work that is localized and with operations suited to the different violence typologies globally.

### Coordination

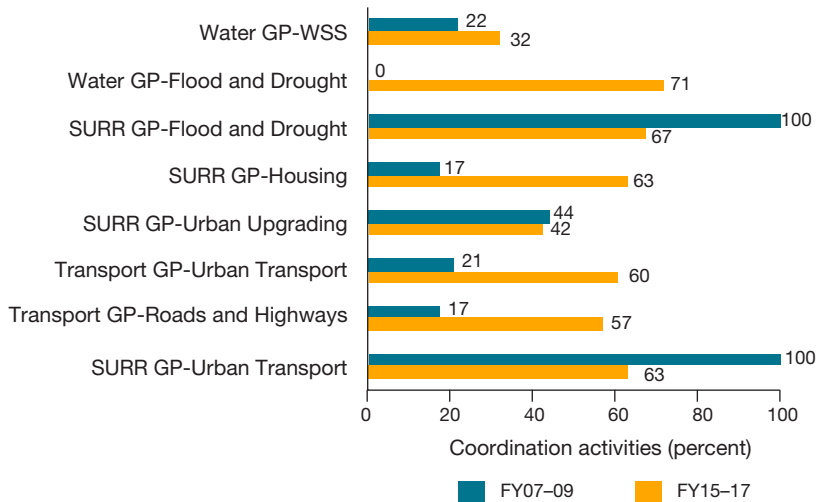
In urban systems, interagency coordination is critical for detecting gaps in infrastructure and service coverage, identifying funding needs and responsibilities, and clarifying mandates across sector agencies.

At the project level, financing for interdepartmental or interjurisdictional coordination has been inconsistent (see figure 2.7), but useful lessons emerge from sector analysis.

In the housing sector, portfolio lessons, supplemented by fieldwork, reveal that although support for coordination is increasing, there is a lack of focus on connecting housing activities to sustainable service provision, in informal areas. For example, in Bahia's Poor Urban Areas Integrated Development project, IEG found that incremental housing improvements led to improved infrastructure quality and lower exposure to risks (flood, fire, open sewerage), and that general infrastructure improvements in the built environment eased access to services. However, the project did not include clear institutional arrangements or legal provisions to ensure links among the urban upgrading units, education, and health service providers.

In the Water GP, financing for intracity coordination activities has significantly increased in urban flood projects but is lacking in the urban water supply and sanitation projects. As clarified by the World

FIGURE 2.7 | Coordination Activities within Projects in Urban Areas, FY07–09 and FY15–17



Source: Independent Evaluation Group 2018.

Note: GP = Global Practice; SURR = Social, Urban, Rural, and Resilience; WSS = water supply and sanitation.

Bank’s Water GP, water task teams often work directly with a water utility and the relevant ministry, while the utility often works directly with and among the municipality(ies). As the Water GP seeks to support wider resilience at the city level, financing for coordinated data collection and management, awareness, and preparedness (including for contingency planning for water investments) form an integral part of their design. Two projects that stand out in this regard are urban water and sanitation investments that include coordination with DRM bodies in Ho Chi Minh City and in Colombia.

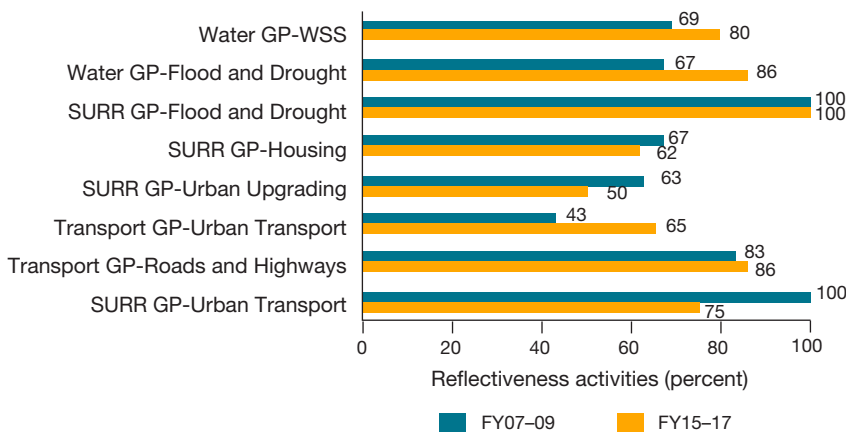
The Transport GP has developed analyses, methodologies, and databases to measure and monitor integration within the city system. The urban transport sector has focused on measuring and assessing accessibility to opportunities, affordability, connectivity, open data methods, and has mainstreamed open-source tools and guidance. SURR projects with an urban transport focus also articulate how the transport system will be integrated into the larger city system.

### Reflectiveness

Resilient city systems require mechanisms for learning, to test and adapt infrastructure and capabilities to varying conditions. Making information available to the end user in a timely way saves lives. Reflectiveness is important for a city to best determine how it can incentivize risk reduction behavior, including in the public and private sectors, within communities, and among individuals.

Overall, support for reflectiveness tools has increased during the evaluation period (figure 2.8). The World Bank has increasingly supported advanced data collection and analysis tools, including remote sensing and geospatial applications for decision-making within urban systems. Equipment and training linked to decision-making are being provided at the subnational level. The most commonly financed tools are early warning systems, geographic information systems, flood mapping, and

**FIGURE 2.8 | Reflectiveness Activities in Projects in Urban Areas, FY07–09 and FY15–17**



Source: Independent Evaluation Group 2018.

Note: GP = Global Practice; SURR = Social, Urban, Rural, and Resilience; WSS = water supply and sanitation.

hydrometeorological (hereafter, hydromet) services in flood protection projects (box 2.3); supervisory control and data acquisition systems, metering, and water quality monitoring systems in the water sector; intelligent transit systems in the transport sector; and land and housing data collection and management in the urban development and housing sectors.

There is evidence that these tools are also being used for timely decision-making. A good practice design example is the Tanzania Second Water Sector Support Project that finances an operational decision support system for forecasting and early warning, and for system operations. It includes a water resource monitoring network for near-real-time monitoring of weather, water levels, flow, quality, groundwater, and sediment load at the basin level. It focuses on institutional reform regarding critical hydromet functions and supports coordination between the Ministry of Water and the Meteorological Agency. It also features information sharing with the public to enhance preparedness and better water use decision-making at the local level. Other water projects also use technology (reflectiveness tools) not just for decision-making and implementation but for monitoring the functionality of services in large, medium, and small urban centers, including in Argentina (Rio Salado, Matanza-Riachuelo), Colombia (Rio Bogotá), Mexico, and elsewhere.

However, only half of the projects in the current portfolio indicate how the provided equipment, training, and skills will be sustained, or how training will be repeated or updated. The Port-au-Prince and Cap-Haïtien city case studies provide illustrative examples of the risks posed by the “projectization” of key services such as civil protection, which, in Haiti, are fully dependent on donor finance. In Haiti, financing for critical hydromet services is also provided entirely by donors and nongovernmental organizations.

Training related to resilience and preparedness should be made available at multiple levels, but very few projects indicate how they will support information sharing at the individual and community



### Box 2.3 | Early Warning Systems and Hydrometeorology

Early warning systems are critical tools in supporting adaptive urban flood management. Capacity to prepare for and respond to floods can help limit the damage and disruption caused by flooding; however, for numerous reasons, urban communities have been, and continue to be, underprepared in the face of urban floods. Expanding urban populations that lack knowledge of the flood history of that area, or that lack experience with flooding more generally, tend to be completely unprepared for flooding (Lamond and Proverbs 2009; Harries 2008). Preparedness, and the ability to cope in the face of a major flooding event, is also associated with the changing demographics of an urban area. For instance, the fastest-growing segments of the population in cities are under 18.

Globally, economic losses associated with extreme hydrometeorological (hydromet) events have increased nearly 50 times over the past five decades, while global loss of life has decreased by a factor of 10 (UNISDR and WMO 2012). This can be attributed to advancements in monitoring and forecasting, early warning, emergency preparedness, and response planning at national and local levels. These investments align with IEG's Climate Change III (2012) recommendation, which encouraged the World Bank to help countries to improve the quality and use of hydromet services (World Bank 2012e).

All but one flood and drought project in the current Social, Urban, Rural, and Resilience and Water portfolios finance resilience-related data collection and monitoring tools, with a notable increase in project financing for both advanced or early warning and hydromet services during the two periods. The World Bank has built a significant level of global expertise for the preparation and implementation of hydromet services, including through the Global Facility for Disaster Reduction and Recovery Hydromet program and the Pilot Program for Climate Resilience Hydromet operations. The World Bank and the Global Facility for Disaster Risk and Recovery have also developed a strong collaboration with the World Meteorological Organization and leading national hydromet agencies in other countries. Most projects that include early warning systems support dedicated decision support systems related to selecting optimal breaching sites, information sharing for evacuation of communities, managing flood peaks, and irrigation infrastructure management during flood events. Importantly, early warning systems supported by both Global Practices are being implemented at the provincial, district, county, and city levels. The Water Global Practice's hydromet investments are likewise being implemented at the basin and provincial levels.

*Sources:* Lamond and Proverbs 2009; Harries 2008; UNISDR and WMO 2012; World Bank 2012e.

levels. The Can Tho Urban Development and Resilience project provides a good example of inclusive training initiatives. The project is using a “trainer of trainers” approach to support women’s unions in their efforts to campaign and organize communities for improved sanitation, and to encourage their participation in early warning systems. In Somalia, the World Bank and the UN Food and Agricultural Organization are helping communities develop community-level drought preparedness and response plans, which include monitoring, communication, and early warning, and which prescribe actions to take before, during, and after drought.

The Transport GP is gradually adopting an approach—referred to as the “criticality of hierarchy”—that applies several criteria to prioritize and weight transport investments and help cities take a more data-driven approach to decision-making for long-term resilience planning while improving the understanding of the effects of short-term events (figure 2.9). The exercise involves a discussion of priorities and trade-offs, often among cost-effectiveness, efficiency, and inclusion. The Belize Climate-Resilient Infrastructure Project applied this principle to select geographical areas of socioeconomic importance and those highly susceptible to natural disasters.

In its analytical work, the Water GP is adopting a “Decision Tree Framework,” which is based on stochastic modeling, that uses historical data to estimate probability distributions of potential water system outcomes in line with risks. The decision tree allows project teams to evaluate the vulnerability of water systems and to evaluate alternative investment approaches to address that vulnerability. It responds to the need within the World Bank to comply with new requirements to consider climate change risks to investments. It has been applied to two World Bank projects to date: the Upper Arun Hydropower Project, Nepal, and the Mwache Multipurpose Reservoir, Kenya. The project is being expanded to include three additional pilot study applications, including the Cutzamala Water System, Mexico, the Matenggeng Pumped Storage Projects, Indonesia, and the Poko Hydropower Project, Indonesia.

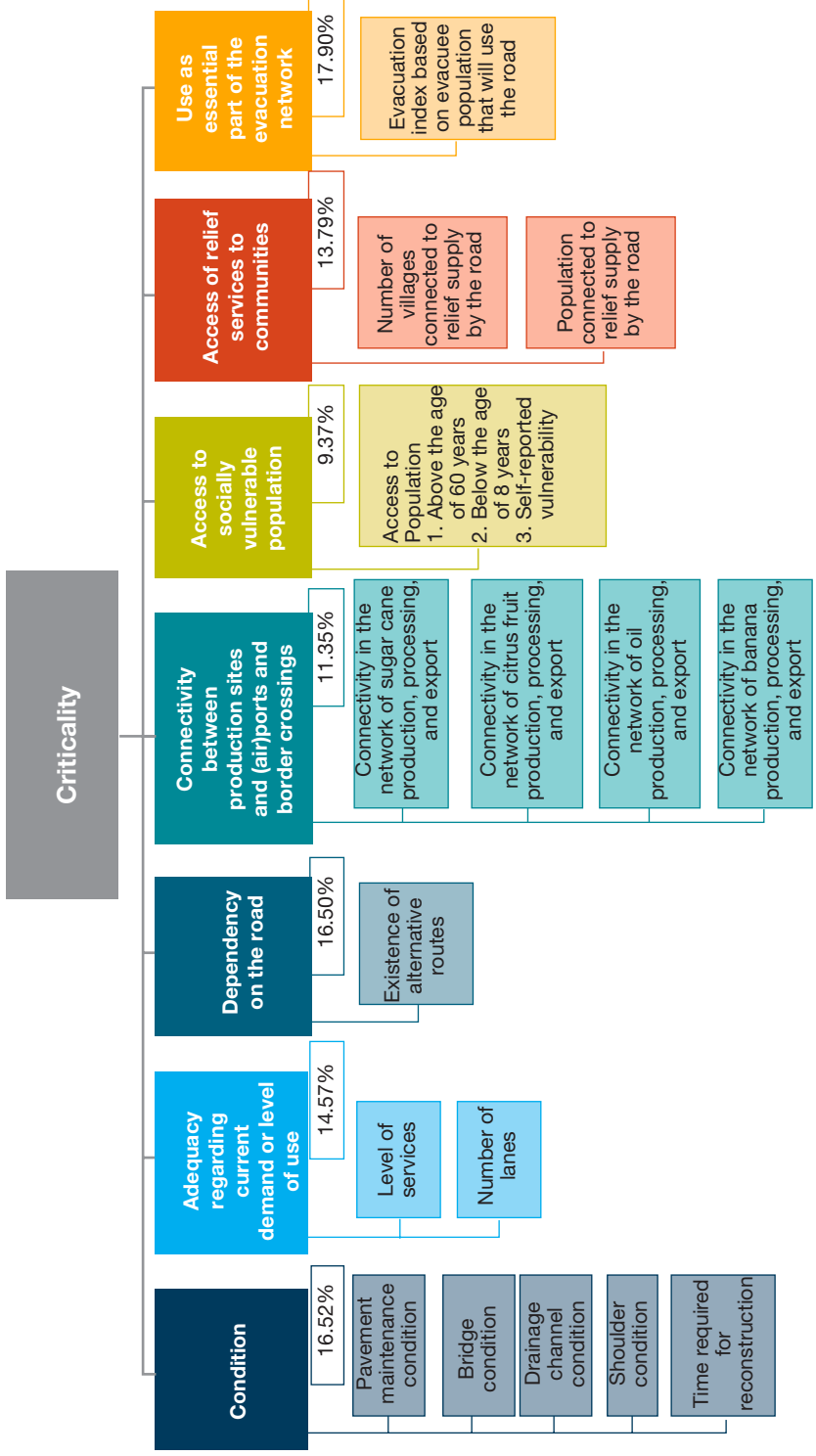
## Redundancy

There are only a few projects that include investments in redundant infrastructure or systems, because of the nascent stage of resilience that characterizes many cities. Redundancy most often appears in the design of DRM projects, and more so in the current period, reflecting a shift from response to preparedness (figure 2.10).

Urban water and sanitation projects are financing water supply capacity increases, yet only 16 percent are investing in backup capacity or increased supply based on forecasted demand, although utilities may carry out improvements on their own. In this context, there is a special consideration being applied by the Water GP for water-scarce utilities, with a focus on the Middle East and North Africa Region. The GP launched a *Water-Scarce Cities* report on challenges faced by water-scarce utilities that offers advice on water security approaches.

Cities in high-capacity countries that receive International Bank for Reconstruction and Development financing are demonstrating how resilience can be enhanced by investing in redundant infrastructure. In Guilin, the World Bank is helping to develop a ring-main water distribution network to ensure security of the water supply system in the event of a plant malfunction or pipeline burst. The project is designed

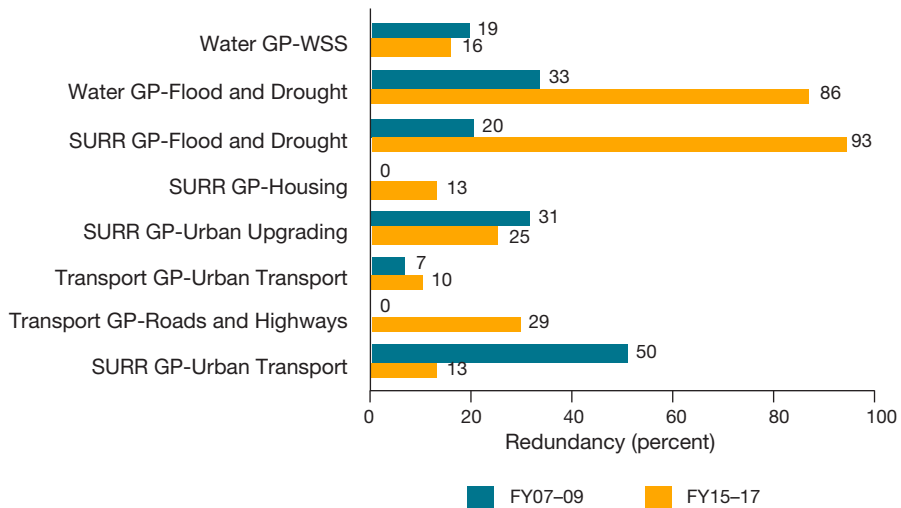
FIGURE 2.9 | Criticality Assessment in the Belize Climate-Resilient Infrastructure Project



Source: Belize Climate Resilient Infrastructure Project project appraisal document, 2015.

Note: Criticality is a result of the seven criteria (boxes in top row), weighted by the attributed relevance of each one (percentage figures). Thereby, each criterion is calculated by means of a set of indicators (light colored boxes).

FIGURE 2.10 | Redundancy within Projects in Urban Areas, FY07–09 and FY15–17



Source: Independent Evaluation Group 2018.

Note: GP = Global Practice; SURR = Social, Urban, Rural, and Resilience; WSS = water supply and sanitation.

to meet the projected demand of domestic consumers, industrial enterprises, an expanded airport, and expanding universities. In Colombia, the Plan PAZcífico Water Supply and Basic Sanitation project is supporting the projected population for 2040 in Guapi, by expanding wastewater treatment capacity.

Cities in low-income countries, such as Conakry, Dakar, and Port Moresby, are using International Development Association (IDA) financing to cope with present-day demand. In Conakry, fiscal constraints are limiting the city’s ability to address water supply challenges associated with sea level rise and climate change. It is only able to address present-day needs related to infrastructure planning, supply, and leakage. In Dakar, rapid population growth, the development of a new economic hub, and vulnerabilities in the system are increasing water demand faster than anticipated. However, the World Bank, and donor partners, recognize that “meeting the demand for 2015–20 is looking extremely tight,” and that priority must be given to present-day water shortages to avoid deterioration in service reliability rather than looking ahead (World Bank 2017d, 3).

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- <sup>1</sup> The Water Global Practice (GP) approved 39 urban water projects between fiscal year (FY)15 and FY17, excluding additional finance, and 54 projects that included additional financing. The FY15–FY17 portfolio, excluding additional financing, includes urban water and sanitation projects ( $n = 25$ ), disaster risk management projects focused on flood and drought ( $n = 7$ ), and integrated water resource management projects that support enhanced water supply to urban areas ( $n = 7$ ). The Social, Urban, Rural, and Resilience (SURR) GP had 113 projects across several themes that received additional financing, and 84 without additional financing, that have urban content, among them disaster risk management projects focused on flood and drought; urban projects that aimed to mainstream disaster risk management; as well as urban services, planning, slum upgrading, informal settlements, and housing. SURR also implements projects in crime and violence and youth employment projects, including community-driven development mechanisms, municipal financing projects ( $n = 6$ ), financial resilience projects, urban land administration, cultural heritage, and urban community-driven development. The Transport GP includes 54 urban transport and roads and highways projects with additional financing and 46 projects without additional financing.
- <sup>2</sup> The International Agency for Standardization is currently developing ISO 37123 (Community Resilience). In this context the use of standards can in some cases be considered aligned with the broader agenda to use urban indicators for the management of cities.
- <sup>3</sup> This analysis reviews the 22 and 8 flood projects approved since FY15 mapped to the SURR GP and the Water GP, valued at \$2.4 billion and \$3.4 billion, respectively. The two GPs work in different countries and use diverse types of financing. Water GP flood projects are mainly in upper-income countries and use International Bank for Reconstruction and Development financing. The SURR GP uses International Development Association and trust funds to support cities in low-/lower middle-income countries.
- <sup>4</sup> The World Health Organization/United Nations Children’s Fund Joint Monitoring Program for Water Supply, Sanitation and Hygiene has reported country, regional, and global estimates of progress on drinking water, sanitation, and hygiene since 1990. The joint monitoring program maintains an extensive global database and has become the leading source of comparable estimates of progress at national, regional, and global levels. The 2015 update marked the end of the Millennium Development Goal period and the 2017 update established baseline estimates for monitoring the new Sustainable Development Goal targets. (<https://washdata.org/how-we-work/about-jmp>)
- <sup>5</sup> Transport GP urban transport projects were identified through Business Intelligence using sector codes (TX “Transportation,” and specifically, TC “Urban Transport”) and themes (71 “Urban Development” and 74 “Road Safety”). A manual screening of project content was conducted to ensure the interventions are in urban areas.
- <sup>6</sup> Transport GP urban roads and highways projects were identified through a Business Intelligence search using sector codes (TI “Rural and Inter-Urban Roads”) and themes (71 “Urban Development” and 74 “Road Safety”) followed by a manual review of project content to identify projects that were financing roads or road upgrades within, to, or in between urban areas, thereby eliminating rural road and highways. Urban areas were identified through a mapping exercise and demographic analysis.
- <sup>7</sup> Inclusion was analyzed using a four-part analysis tool. The tool determines whether vulnerable groups were (i) acknowledged, (ii) acknowledged but not directly supported, (iii) acknowledged and directly supported, or (iv) supported and tracked using disaggregated indicators in the results framework (see appendix A for the full data set). The trend that gender receives greater attention, more financing, and better tracking compared with other groups was similar across all sectors analyzed.
- <sup>8</sup> The graphs in this analysis only consider inclusion if project appraisal documents are explicit about what activities will be financed to support the specialized needs of the vulnerable group in question. Acknowledging a vulnerable group is insufficient if it is unclear how they will be supported by the project.



# 3

## Evolving Resilience at the Urban System Level

### highlights



The World Bank Group does not systematically consider urban resilience risks at the city level: the treatment of these risks tends to be unbalanced and there are significant gaps in the city portfolios. Sectors identify risks linked to the design of investments, but do not identify urban system risks. Urbanization Reviews, the flagship analytical tool, is not designed to assess resilience risks. IFC does not use a risk assessment in dialogue with municipal clients in its strategic Cities Initiative.



Urban resilience is a complex theme requiring cross-sectoral analysis at multiple levels to assess how interventions effect system change. At the urban systems level, the evaluation assessed the Bank Group's contribution to building urban resilience, along a continuum (awareness raising, coping, adapting, and transforming) in nine city studies. The cities were selected to assess the relative performance of three different "entry points" used by the World Bank and one by IFC comprising (i) the City Strength Diagnostic process, (ii) sector-led programmatic approaches, (iii) no-regrets approaches, and in IFC, (iv) the Cities Initiative.



The City Strength Diagnostic process pilot, implemented in Can Tho, Accra, and Addis Ababa and secondary cities in Ethiopia, has been effective at identifying and raising awareness about urban system resilience risks and facilitating a coordinated approach among Global Practices within the World Bank and within city governments. The pilot has not been scaled.



Sector-led, programmatic approaches, as in Bogotá, Chongqing, and Can Tho, have contributed to resilience outcomes and provide useful operational lessons. The programmatic approaches assessed (i) were informed by robust diagnostics, (ii) addressed binding constraints, and (iii) adapted to changing circumstances through iterative learning, disruption, and project adjustments. These results can be reversed, take time, and require a sustained, phased engagement strategy.



Pragmatic, no-regrets approaches address urban risks, but awareness and institutional learning are lacking. Short-term fixes (for example, dredging to address urban flooding) enable coping, but do not facilitate system adaptation in the absence of a sustained, phased approach buoyed by municipal capacity and strong political commitment. No-regrets approaches are often the only option in politically constrained environments, but these efforts could be better positioned within a resilience-building strategy at the urban system level

(by combining dredging activities with environmental grant finance at the watershed level).



IFC's Cities Initiative does not use resilience risk assessments with municipal clients. Its investments in one strategic city, Izmir, improved municipal services, but without a resilience risk-informed urban planning model, robustness (seismic risk) and inclusion were lacking. Though these interventions supported the use of data for decision-making, the municipal role in maintaining and managing data systems was underemphasized.

**URBAN POPULATIONS** depend on interdependent urban systems (infrastructure, ecosystems, institutions, and knowledge networks) that support, and are supported by, a city's actors or social agents (individuals, households, and private and public sectors). The resilience of a city depends both on the strength of the urban system and on the capacity of social agents to anticipate and to act to adjust to changes and stresses, while recognizing the constraints of resources and support systems (Dickson et al. 2012).

### Resilience Risk Identification at the Project and Portfolio Levels

Understanding the relative resilience of a client's major city systems and its most pressing risks should be a core element of upstream country diagnostics and associated investment planning. Many of the SCDs reviewed for this evaluation (linked to the city case studies) do not have a specific urban resilience theme. They are not informed by relevant and timely analysis of urban resilience challenges because the World Bank's flagship urban Advisory Services and Analytics, the Urbanization Reviews, was not designed to cover this. Exceptions are countries that made timely use of the CSD and other resilience diagnostics.

In the absence of a sequenced and systematic approach to diagnosing urban resilience risks, the treatment of these risks tends to be unbalanced, with important gaps in the World Bank's city portfolios. To the extent that urban resilience is covered in the SCDs, DRM risks are more frequently cited than other chronic stresses (such as pollution and drought), or social risks (population influx, crime, and violence).

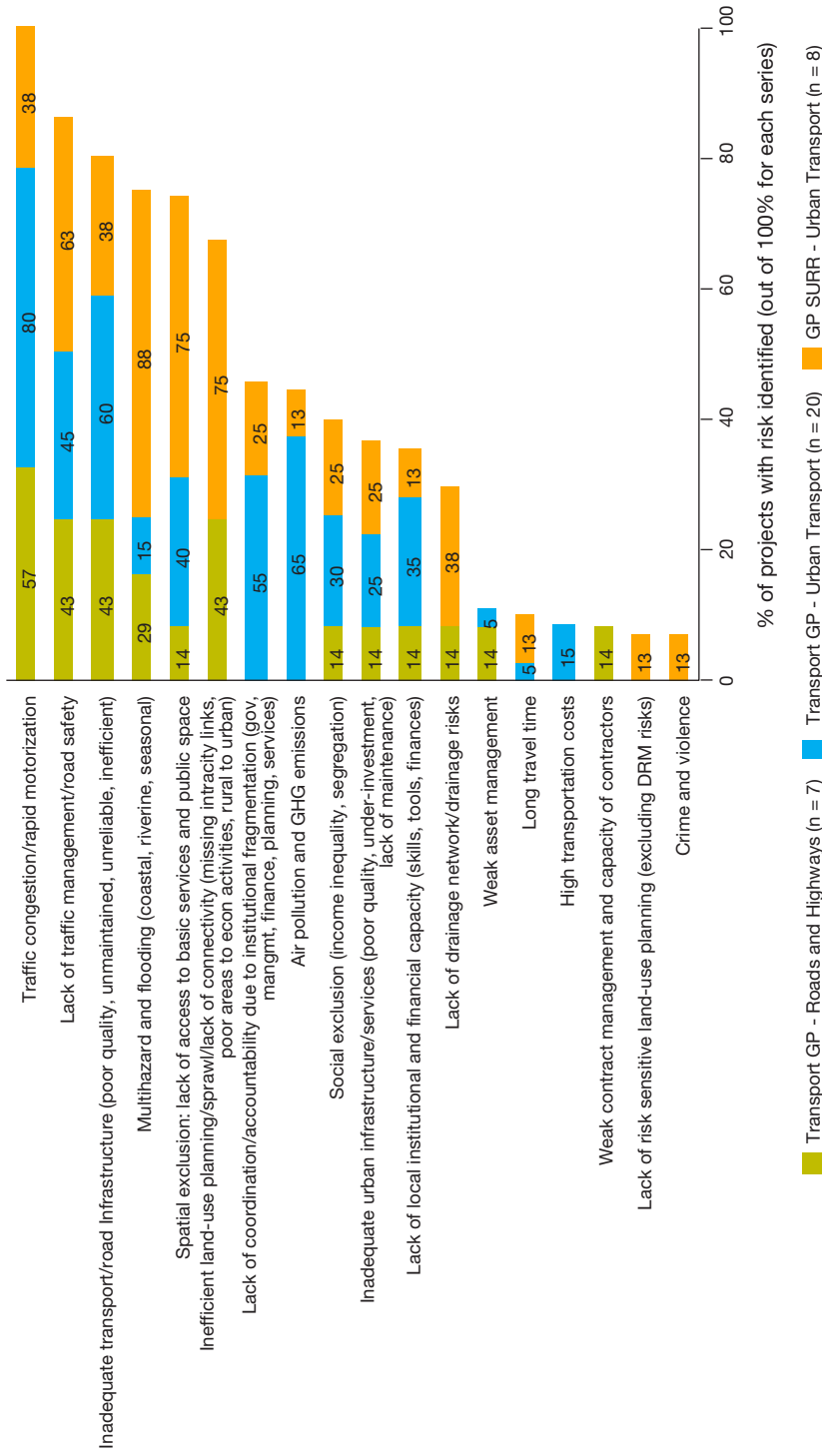
Urban resilience risks are analyzed at the project level through a sector lens, not at the system level. GPs that finance the same types of investment tend to identify different risks, and these risks tend to be linked to the underlying investment (see figure 3.1).

Both the Transport and the SURR GPs finance urban transport infrastructure, but only the Transport GP systematically identifies pollution risks (figure 3.1). The transport sector contributes significantly to particulate air pollution, a major urban resilience risk. As highlighted in *Toward a Clean World for All*, particulate matter levels increased in 3,000 cities by 8 percent between 2008 and 2013, mostly in low- and middle-income countries, where 98 percent of cities do not meet World Health Organization guidelines (World Bank 2017).

Urban transport infrastructure projects implemented by SURR often identify natural hazard and weather risks, but most do not identify pollution risks. More than 80 percent of SURR urban transport projects cite DRM risks compared with 15 percent of the Transport GP urban transport projects, even though these latter projects are also being implemented in cities with disaster risks. As discussed in chapter 2, factors driving the design and risk analysis in urban projects are linked to skill mix and team composition, and this is leading to suboptimal solutions.

FIGURE 3.1 | Resilience Risks Identified in Urban Transport Portfolios, FY15-17

Resilience risks identified at appraisal (FY15-17) in urban transport infrastructure projects in the Transport and SURR GPs



Source: Independent Evaluation Group.

Note: Resilience risks identified in project appraisal documents by the Transport and Social, Urban, Rural, and Resilience (SURR) Global Practices (GPs). DRM = disaster risk management; GHG = greenhouse gases.

These risk assessment gaps indicate the need for a more systematic way of engaging in a multisectoral dialogue upstream, to identify the most critical risks facing an urban system, and to pivot the World Bank's assistance toward them. A framework approach that is flexible but uses diagnostics in collaboration with the client (at the national and subnational levels) could help identify system-level risks and opportunities for transformational engagements.

## Building Urban Resilience at the System Level: Assessing the Bank Group's Contributions along a Continuum

Urban resilience is a complex theme requiring cross-sectoral analysis at multiple levels to assess how interventions effect system change. They include leverage points key incidents, institutional shifts, or individual decisions that affect the way each system or its composite parts behave; if changed, these leverage points can have transformative effects. They can be enabled or constrained by system interventions. System behavior takes place in phases that are not always linear and may overlap and can be modeled over time (see figure 1.2). To recap, these phases include awareness raising, coping, adapting, and transforming (see chapter 1).

The evaluation assessed the Bank Group's contribution to building urban resilience, along this continuum, in nine city studies. The cities were selected to assess the relative performance of three different "entry points" used by the World Bank and one by IFC comprising (i) the CSD process (IEG conducted city case studies of the entire population of all three CSD pilots), (ii) sector-led programmatic approaches, (iii) no-regrets approaches, and in IFC, (iv) the Cities Initiative.

### The City Strength Diagnostic Process

The CSD process has been an effective pilot, but it has not yet been scaled. The process (including a tool kit and guidance) was launched by the World Bank in 2014 (and revised in 2018) to introduce a more holistic approach to guiding World Bank operations in urban areas. It is an engagement process that has been effectively implemented in three different city contexts where it has helped identify city-wide resilience risks and facilitate an inclusive multisectoral process for urban resilience building at the city level.

In all cases where it has been piloted (Accra, Addis Ababa and regional capitals in Ethiopia, and Can Tho), it has fostered a shared understanding of resilience among city officials and across GPs, leveraged upstream analytical work to inform more resilience-focused project design, and influenced the design of traditional sector projects. It has demonstrated the potential to provide coherent insights to what is happening in the urban space across World Bank and other city investments. In Accra and Addis Ababa, however, although there is increased awareness at the institutional level and indications that policies and decision-making are adapting, changes to the built environment will take time (table 3.1).

In Greater Accra, where the CSD was piloted in 28 local governments, the system-level analysis revealed that institutions show proof of learning, with potential for adapting. Based on a set of 20

semi-structured interviews with city officials and experts, and analysis of eight key projects, the analysis reveals that the institutional system shows signs of surpassing sectoral implementation of individual institutions' mandates. It also shows that, in part owing to the CSD process, there is improved institutional coordination focused on long-term efforts to build resilience, which features prominently on the agenda of the various institutions involved. However, remedial actions following a 2015 flood disaster show signs of slow recovery and only partial coping including through dredging and drainage activities, and as illustrated by delays in resettling vulnerable communities from hazardous areas.

In Addis Ababa and 11 secondary cities in Ethiopia, the CSD process facilitated a dialogue among government, civil society, residents, and the private sector about resilience risks and the performance of urban systems. It leveraged client interest and financing (trust funds) for a series of upstream resilience-related assessments that are informing urban infrastructure planning and investments. These include hazard mapping to inform the national strategy for safe and resilient cities, and a joint review of the Building Regulatory Framework with the Ministry of Construction that focused on building codes, land use planning, and construction management.

In more advanced cities, like in Can Tho, adaptive institutional behaviors are being accompanied by changes to the built environment. The World Bank's new programmatic, systems-level approach to urban flood protection in Can Tho has been informed by the major resilience risks identified and recommendations that emerged from the CSD process. Prior to this new approach, the World Bank had helped citizens of Can Tho to cope through targeted support for resettlement, but the CSD and other analytical work pointed to the need to take a more systems-level approach to address the threats posed by flooding and uncontrolled urbanization. The new project does this by proactively guiding growth to higher-elevation areas of the city, while implementing flood measures in the urban core. It also continues to focus on urban upgrading to address encroachment on drainage canals. Standards developed based on hydrological modeling are defined to a 1-in-100-year flood event. Early warning systems are also being improved with precision physical monitoring systems. Importantly, as part of the systems-level approach, the project addresses land subsidence, an area rarely pursued in the World Bank's urban portfolio. The case is illustrative of the way that the World Bank has supported an adaptive urban system-level transition.

A cross-cutting finding from the city case studies, including Addis Ababa, Can Tho, and Manila (not part of the CSD process), is that multi-GP responses offer the potential for "urban resilience multiplier effects." In these cities, the World Bank is linking its social protection programs to disaster response. In Can Tho, the World Bank has helped adapt the city's existing social protection system to become "disaster responsive" in a parallel operation (Systems Strengthening Project) for households affected by flooding. In Addis Ababa, the Productive Safety Net Program is tackling unemployment by linking it to urban resilience investments. The program provides opportunities for youth in occupations that promote green growth activities in cities (urban agriculture, park maintenance, and other nature-based solutions to protect the city). Other employment activities are linked to drainage and sanitation maintenance.



TABLE 3.1 | The Contribution of the City Strength Diagnostic Process in Accra, Addis Ababa, and Can Tho

Contribution	City		
	Accra	Addis Ababa	Can Tho
Behavioral shifts	Accra's institutional system shows signs of learning, surpassing sectoral implementation of individual institutions' mandates; improved institutional coordination linked to the CSD process. The CSD led to multisectoral projects (Greater Accra Clean Resilience and Inclusive Development project); it is too soon to know whether these will be adaptive.	The CSD raised awareness about resilience within multiple ministries and urban local governments through a participatory process; multiple, multihazard assessments done jointly; and a new resilient approach to local urban development. Because the assessments are recent, it is too soon to link them to institutional behaviors likely to lead to system-level change.	Can Tho is exhibiting cooperative behavior and adopting long-term planning processes between departments ("breaking the silos"). It is transforming its built environment to reduce flood risks through a polder system while using transport to guide growth to elevated areas and enhancing the urban core.
Enablers or constraints	Infrastructure changes in the built environment show evidence of coping, owing to remedial actions, supported by the World Bank and other donors, after floods. There is no indication of comprehensive behavioral change when it comes to flood-proofing vulnerable structures. Resilience gains envisioned by a MIGA guarantee of a desalination plant were unrealized. Land is the most difficult issue. Increasing jurisdictional fragmentation reduces the effectiveness of collaborative efforts.	Sustained engagement by local government and increased administrative capacity underpins resilience. There was a shift toward an expanded approach to social risks and job creation, beyond public works. Use of disbursement-linked indicators at the city system level, for example, livability, sustainability, management, "urban resilience," and inclusion (gender) targets. There was a shift in the key sector (transport) from coverage to lead sector model to improve livability. Social safety nets were integrated into the urban resilience agenda.	The World Bank's approach has evolved, a shift observed after CSD, as evidenced by a new resilience project that facilitates interdepartment cooperation, open data, and a programmatic approach. There was a move from a neighborhood approach to a systems-level approach at the city level. Social safety net/disaster risk management links were implemented. Potential constraints are innovative aspects are relegated to the mid-term review; complex technology, and capacity to maintain systems.
ACAT	Increased awareness of resilience at all levels. Just coping in the built environment (no evidence that structures are flood resilient) Adaptive behavior, beyond sector, cross-institutional mandates.	Increased awareness about risk-sensitive urban development; World Bank-supported efforts are helping city to cope with risks. In local governments there is the potential to shape a more adaptive environment by consolidating the urban space through infrastructure.	Adapting at the institutional level and within the built environment with potential for transformation.

Source: Independent Evaluation Group.

Note: ACAT = awareness, coping, adapting, and transforming; CSD = City Strength Diagnostic; MIGA = Multilateral Investment Guarantee Agency.



### New “Resilience Projects” Emerging from the City Strength Diagnostic Process

Due to the awareness raised about urban resilience, across sectors, through the CSD process, several new “resilience projects” have emerged during the evaluation period. While too soon to evaluate, there are lessons about the relevance and complexity of these designs that are useful to consider when operationalizing urban resilience. For example, the Greater Accra Clean Resilient and Inclusive Development project is addressing flood risks through a multisector approach that targets low-income communities in flood-prone areas. Integrated projects like the Greater Accra Clean Resilient and Inclusive Development require strong collaboration, however, even when well formulated. Experience so far demonstrates that cross-sectoral coordination is challenging: the Ministry of Environment, Science, Technology, and Innovation withdrew from preparation, and the Ministry for Inner Cities and Zongo Development subsequently “offloaded” most of its components.

In Addis Ababa, after the CSD process, there was a shift in the transport sector from a focus on increased coverage to transport system resilience. A significant shift, the new project is designed to address urban system-level risks: congestion, accessibility, and connectivity. In the past, road network expansion was not accompanied by traffic management or public transport services, which has limited the mobility of the poor. One of the major constraints to building urban resilience in Addis Ababa is a history of housing and land use decisions that were based on available land, not on a more holistic approach that assessed transport impacts.

Early analysis through the city case studies suggests that caution is needed when implementing multisectoral resilience projects that require strong coordination and implementation support. For an integrated resilience project to be successful, all parts of the system-level intervention need to be effectively implemented and sustained. In Accra, the upgrading of drainage infrastructure downstream of the Odaw river to a certain design standard will only reduce flood losses if implementation of the reservoirs upstream is done successfully. The relocation of communities with residual flood risk will only help reduce losses if new communities do not resettle the cleared lands. In Can Tho’s integrated resilience project, risks are associated with local government capacity and the potential adoption of innovative technologies from the Netherlands that require active management. It is also unclear how the project will monitor or consider issues related to long-term resilience building (institution building and subsidence management).

### Sector-Led, Programmatic Approaches

Most World Bank support in urban areas is provided through sector-led approaches, often through water and transport investments. Many of these investments are stand-alone and historically have not had a resilience lens.

This evaluation identified and assessed resilience building in key urban engagements, many of which have been phased, and all of which have been designed based on extended country engagement in the sector. These engagements, illustrative of a programmatic approach, include the following: seismic risk resilience in Istanbul, where the World Bank has had an ongoing engagement after the 1999 earthquake in Marmara; addressing congestion, social exclusion and safety, and pollution over

two decades in Bogotá, through incremental upgrades of the Transmilenio public transport system; and integrated approaches to flood protection, incrementally, in Can Tho and Chongqing.

The assessment of these approaches along the urban resilience continuum found that adaptive systems behavior is linked to (i) robust underlying diagnostics, (ii) tackling of binding constraints, and (iii) project adaptation to changing circumstances in the urban environment through iterative learning. These results are nonlinear, take time, and require a sustained phased approach. In the three sector-led cases reviewed, resilience outcomes were attributed to learning from past experiences and adapting design. Learning was achieved through studies, impact assessments, and citizen feedback. Clients were also willing to disrupt and reorganize an established system to facilitate adaptation to changing urban circumstances.

In Istanbul, the World Bank–supported flagship program, the Istanbul Seismic Management Emergency Project, has reduced vulnerability to earthquake risks. Programmatic approaches can often be triggered by a shock, like the 1999 Marmara earthquake, which killed 17,000 people and made millions homeless. The World Bank’s support for seismic risk reduction has significantly helped shift incentives and behaviors related to disaster preparedness. Civil defense agency capacity has increased, as demonstrated by certification processes. There is some evidence of increased household awareness of disaster risk, but less evidence of behavioral change. With the World Bank’s support, national agencies and the governorship have prioritized risk reduction in their decision-making processes. Istanbul has also retrofitted a large stock of older buildings but there remains significant vulnerability in the existing stock of private buildings, which constrains overall urban system-level resilience.

In Bogotá, the World Bank has supported iterative coping and, over time, the adaptation of the city’s public transport system, the Transmilenio. Over three phases and two decades, the World Bank has helped address a complex, interlinked set of resilience challenges associated with a lack of mobility in and around Bogotá. System improvements, though nonlinear, have occurred through adaptive system learning, including through studies and citizen polling. By investing in multimodal transport—a BRT, a network of bike lanes, and pedestrian sidewalks and crossings the World Bank has helped reduce traffic fatalities (ODI and WRI 2018). Across phases, the World Bank also conducted an impact analysis to address exclusion related to high costs (since the system strives to be self-sustaining). The findings led the city to design a pro-poor transport subsidy scheme, with World Bank assistance. (In Bogotá, households in the poorest areas of the city spend, on average, between 16 percent and 27 percent of their income on transport compared with a maximum of 4 percent per household in more affluent areas.) After two decades, gaps remain, however, including pollution linked to the use of diesel fuel and women’s safety issues,<sup>1</sup> which hinder system transformation.

In China, the World Bank’s assistance for flood protection along major rivers, historically focused on structural measures, has begun to shift toward a more integrated systems approach. The shift—which features an integrated approach based on a river basin planning module for rapidly urbanizing areas in Chongqing municipality—has occurred alongside the adoption of China’s new Water Law. It seeks to tackle core urban system resilience challenges at the level of the river basin. Although the approach has the potential to be transformative—to achieve pollution reduction at the source, as well

as wastewater treatment and use, and to raise awareness for new urban residents unaccustomed to floods—it is also risky, because capacity for land use planning, monitoring, and coordination between river basin authorities and local governments is weak. Regulations are also nascent for multipurpose reservoirs in China.

### No-Regrets, Pragmatic Approaches

Sector-led no-regrets approaches are “just-in-time,” pragmatic, and technically oriented solutions to a shock or chronic stress. Such approaches are often taken when a more programmatic approach in the short term is prevented by political, fiscal, or capacity constraints. Case examples include flood mitigation in Cap-Haïtien and other disaster relief efforts after a major earthquake in Port-au-Prince.

Sector-led no-regrets solutions, though pragmatic, were found to be less resilient than systems-level approaches. In these cases, as in Cap-Haïtien and Port-au-Prince, it may be necessary to engage moderately to support critical coping, but such investments need to articulate how they will contribute to sustained resilience building over time. This need not entail increasing project complexity. Rather, engaging at the system level may require parallel finance or the co-location of other World Bank–financed activities, and where feasible, leveraging private finance.

Haiti’s frequent and severe disasters have shifted critical development assistance from needed institutional strengthening to urgent response and recovery. Efforts to create more adaptive systems are undermined when resources intended for long-term institutional development and changes to the built environment are shifted for emergency recovery. IEG’s city case study, supplemented by a review of 38 urban-focused projects (FY07–17) and 30 interviews, demonstrated that the pragmatic approaches supported by the World Bank have enabled communities to cope in the face of shock. The World Bank has helped Port-au-Prince to cope and recover by clearing large amounts of rubble, rebuilding infrastructure, and restoring services, and by providing housing subsidies to displaced persons after the earthquake. An International Organization for Migration survey found that World Bank crisis support helped citizens and the city to recover quickly by emptying camps and preventing the further spread of a cholera pandemic, by linking the displaced to subsidized rental opportunities, and by smoothing consumption. These efforts have not shifted institutional behaviors nor affected the built environment in a way that allows for system adaptation.

In Cap-Haïtien, which is situated between a river and the sea, effective watershed management is central to resilient urban development. The World Bank is supporting dredging solutions to reduce flooding in Cap-Haïtien, but the approach is not fully oriented toward securing the water supply. The project is financing emergency works (slope stabilization and sediment cleaning), structural measures to control sedimentation, and vital resettlement activities but more could be done to situate this in a wider systems-level scheme that addresses the drivers of flooding in addition to protecting people and property within the basin. The no-regrets approach is responsive to political urgencies but falls short of addressing behaviors (land use, deforestation, and housing on the hill sides) that are driving the challenge. Such projects may opt to procure Global Environment Facility funding to support upstream catchment investments. In Cap-Haïtien the catchment area was declared protected in 1947, but it is heavily encroached on and denuded.

The greatest resilience challenge for the World Bank in Cap-Haitien, as in the other cities studied, is that its project solutions are constrained by access to land. There is no urban land registry and titles are difficult to obtain; its options for addressing the issue systematically are limited.

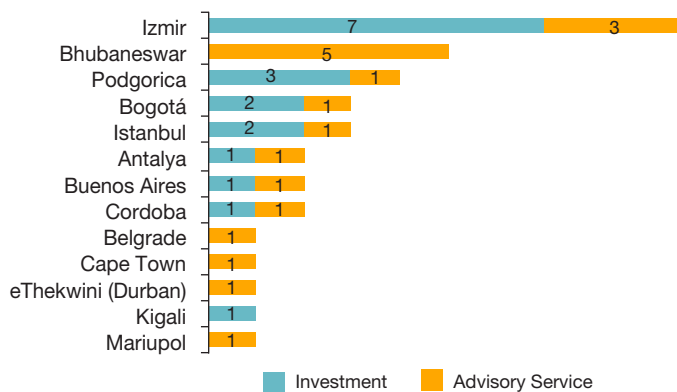
### IFC's Strategic City Initiative

IFC launched the Cities Initiative in 2014, in response to the widening gap between the pace of urbanization and the funding available to meet infrastructure and service needs. The initiative is based on the premise that cities, especially secondary and tertiary ones, lack adequate planning, technical expertise, and creditworthiness, and have limited funds for project preparation and implementation. Consequently, it was designed to provide a more strategic partnership with subnational governments and municipal clients, to offer a full suite of investment and advisory projects related to urban infrastructure development, across a range of product lines.

As of April 2018, IFC had identified 16 cities as Strategic City Engagements (figure 3.2).<sup>2</sup> These cities are Antalya, Izmir, and Istanbul (Turkey); Bogotá (Colombia); Durban and Cape Town (South Africa); Kyiv, Mariupol, and Khmelnytskyi (Ukraine); Ho Chi Minh City (Vietnam); Buenos Aires and Cordoba Province (Argentina); Belgrade (Serbia); Podgorica (Montenegro); Kigali (Rwanda); and Bhubaneswar (India). The initiative provides access to subnational finance, including municipal finance and state-owned enterprise finance, advisory services, and public-private partnerships, in addition to private sector investments.

Within these cities, IFC is supporting 36 individual projects and activities, including investments and advisory services within five public services sectors, including urban transport, roads, education, and water and wastewater treatment, and distributed across all regions. Together, these initiatives are funded at a level of \$846 million. The city with the largest portfolio in terms of project numbers is Izmir (10); it was thus chosen for a review for this evaluation. The evaluation also conducted field analysis in Istanbul, Bogotá, Durban, and Cape Town.

FIGURE 3.2 | IFC Projects per Strategic City (number)



Source: Independent Evaluation Group 2018.

Note: IFC = International Finance Corporation.

This evaluation found that resilience was not a driving factor in the development of IFC's Cities Initiative. For example, resilience does not figure in Board reports of projects that mainly support cities; nor is it featured in the implementation plans for the Regional Cities Platforms. If implemented effectively, the Cities Initiative has the potential to deliver cumulative impacts across different sectors, at the sector and municipal levels, to enhance the resilience of an urban system. The reason is that strategic, bundled support (that is, multiple products and services) provided to address critical urban planning or service delivery challenges is more likely than an individual investment to influence integrated urban resilience outcomes at the city level.

IFC's Europe and Central Asia Cities Platform piloted a theory of change for its Cities Initiative, but it does not explicitly refer to resilience. It touches on areas where IFC can contribute to urban resilience based on its competencies. The envisioned impacts can loosely be aligned with resilience characteristics, but they need to be made explicit. Objectives to enhance the quality of urban services could result in more robust infrastructure, and improved access, but this would require the integration of resilience risks upstream, including the incorporation of design standards in line with resilience risks. Likewise, efforts to improve environmental sustainability need to be linked to the cumulative effects of IFC's investments at the municipal level.

#### Izmir

Izmir is IFC's "pioneer" Strategic City Engagement. The credit outlook rating of Izmir, while not fully attributable to IFC, has slightly improved during the IFC investment period. Further, IFC's additionality is associated with lowering the risk for international investment in the city. Izmir has accessed 13 subnational projects valued at \$500 million. The funds have been accessed by Izmir Metropolitan Municipality and associated state-owned enterprises to improve their public services for urban transportation (light rail, metro, ferries, and bus) and smart city development; wastewater and sewerage management; and roads. When IFC first started working with Izmir, the city borrowed approximately 30 percent of its short-term finance commercially and was otherwise fully reliant on public sector finance. Now, this figure is about 70 percent.

In theory, a formerly creditworthy municipality with an established IFC track record should be able to access finance from commercial markets. However, Izmir has continued to seek IFC investment at the municipal level, due to its inability to access similar terms from the national development bank (which would require a sovereign debt guarantee) and because it is attracted to the upstream planning aspect offered by the Cities Initiative. Municipalities expect more attractive terms, more innovative financing for projects, and longer maturity rates, which may draw them toward IFC.

Although creditworthiness is a key factor in cities' ability to gain access to sustainable and affordable finance for infrastructure and services, the Cities Initiative has not systematically integrated a resilience conversation into its city engagement strategy. Nor does the initiative appear to have considered how it could measure cumulative resilience impacts. There is consensus, within and outside of the initiative, that the IFC's Development Outcome Tracking System indicators have not been developed to measure effects, including cumulative effects, at the municipal level. The Izmir Municipal Finance project is a good example. The project sought to increase mobility through a smart

traffic system and to lessen emergency response times (and so save lives) by financing vehicles and equipment. But indicators such as “reduction in travel time,” or “average response time per fire call” are too static; they do not account for the cumulative effects of urban agglomeration. Because of this limitation, some project results were not achieved as planned. Response times were longer than planned, because of residential growth and longer transit times.

IFC commissioned a World Resources Institute (WRI) “Cumulative Impact Assessment” of the municipal investments in Izmir. The assessment did not include a resilience lens and was constrained by the lack of access to data on the wastewater investments at the hospital and household levels. The lesson for subnational investments is that data can be hard to access because of its political nature. The WRI assessment used traditional metrics to show time savings linked to economic opportunities and showed that pollution reduction is likely to save lives. The analysis also demonstrated that transport expansion increased access to jobs, including for persons living in social housing. WRI found that IFC investments improved accessibility and, combined with all transport investments, led to an increase in average job accessibility of 5.2 percent. However, because of challenges accessing data, the assessment only captured supply data the potential for job access from increased connectivity. It was not able to access demand or usage data since this is private and hard to obtain.

The assessment did not analyze IFC’s interventions within a wider systems-level framework: as acknowledged in interviews, many of these investments were made outside of an urban planning model. In Turkey, housing considerations are often made separately from transport and mobility investments. Housing is often situated on affordable land that is not yet connected to services and jobs. The IFC-financed iZSU Company metro extension to Balçova increased access to tourism areas and the airport; but it bypassed key industrial employment centers: stops were placed far apart, and the system lacks multimodal integrated transport options connecting the metro to jobs.

The WRI assessment also highlights the lack of attention to integrated standards for DRM in IFC’s investments. Izmir has high seismic and flood risks, but these considerations did not appear central to the land use planning and infrastructure design of the Izmir investments (transport, water, wastewater, and so on).

A key lesson that emerged from the WRI assessment is the need to put data systems at the center of municipal investments including issues of the ownership of data and its use. IFC is much less able to leverage data than the World Bank. In the case of Izmir, private sector firms were hired to create a smart city dashboard, but data ownership was not a focal issue in project preparation, nor was the client’s capacity for continued use of data for city-level decision-making.

Another lesson about measuring resilience that has emerged from IFC and World Bank investments is that cumulative effects are best measured through predicative proxy indicators that can capture the status of resilience actions at various levels and at different stages because resilience outcomes necessarily occur beyond the lifetime of an operation.

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<sup>1</sup> A study by the National University of Colombia has shown that the system's first-phase buses contributed to 70 percent of the city's air pollution, and official metropolitan data show that more than 50 percent of the first- and second-phase buses are hazardous for the environment because they do not fit the atmospheric emissions rules. While this must be considered in light of the emission reductions that have been achieved through a shift to public transport, official data collected for this assessment show that the number of cars increased from approximately 666,000 in 2005 to 1,586,700 in 2016, and that the number of motorcycles is also growing. According to a 2012 survey by the Secretary of the "Women of Bogotá," 64 percent of women said they have been victims of sexual assault in the system. Several policies have been adopted to address this problem, such as an exclusive bus for women, or a special group of undercover policewomen, but none of them have been effective against the problem, and the sexual assault cases continue.

<sup>2</sup> Although 16 cities are listed, 3 of these cities involve projects that are still in the pipeline and have yet to be approved or implemented. These cities include Ho Chi Minh City, Kyiv, and Khmelnytskyi. The memorandums of understanding of these projects have been produced and preliminary reviews and opportunity exploration exercises are under way. The other 13 strategic cities have projects or related activities under way.



# 4

## Urban Resilience Financing Models

### highlights



The approach to urban resilience financing is shifting from a public finance model to focusing more on private sector partnering opportunities.



The World Bank has helped crowd in funding for critical urban resilience-building activities, especially for small island states. It has stated an aim to leverage \$500 billion for urban resilience in 500 cities. However, its capital mobilization strategy for urban resilience is unclear.



Efforts to mainstream resilience reveal a dependency on a single program, the Global Facility for Disaster Risk and Recovery, which includes an urban resilience engagement area. This engagement area has funded much of the World Bank's analytical work on urban resilience. Since 2014, the Global Facility for Disaster Risk and Recovery has financed 91 percent of the costs, and other trust funds have financed 5 percent of the costs, of 68 knowledge and technical assistance products related to urban resilience.





At the portfolio level, the incremental administrative costs of mainstreaming resilience are relatively high compared with standard administrative costs. In the World Bank, the Social, Urban, Rural, and Resilience and Transport Global Practices have partnered to mainstream resilience into transport operations. For FY14–18, this partnership has mainstreamed resilience activities into 30 urban transport operations. For transport operations in International Development Association countries, trust funds have contributed 42 percent of the World Bank’s preinvestment and implementation support for projects that mainstream resilience activities. Trust funds linked to the resilient transport initiative contributed much larger amounts for technical assistance and knowledge products, from between 94 percent and 100 percent of expenditures.



IFC’s resilience-building partnership with the Rockefeller Foundation has been used to carry out due diligence and to mitigate social risks. But the facility has been slow to disburse, and its use closely mirrors other trust funds that support performance standards. Anticipated links between the Cities Initiative and Rockefeller’s 100 Resilient Cities have not fully materialized.

**ASSUMPTIONS** about the way that resilience should be financed are shifting from a reliance on public finance to a recognition of the role that the private sector can play. Since governments have an obligation to protect their citizens, resilience is a public good dependent on public funding (Lall and Deichmann 2009). However, at the UN-Habitat III Conference in 2016, the World Bank announced an aim to crowd in \$500 billion for urban resilience in 500 cities and to remove 50 million people from poverty by 2035, as part of its Maximizing Finance for Development goals. More recently, the Bank Group set up its City Resilience Program. The program intends to catalyze a pipeline of well-prepared and bankable investments to enhance urban resilience, and to improve access for private and institutional investors to crowd in to new markets; but it is too early to evaluate it.

## Reliance on External Sources of Finance for Mainstreaming Urban Resilience

Financing for urban resilience mainstreaming is mainly coming from external programs and from trust funds. Much of the World Bank's analytical work on urban resilience is funded by the externally financed program—the GFDRR—through its urban resilience engagement area. Since 2014, the GFDRR has financed 91 percent of the costs of 68 knowledge sharing, capacity building, analytical, and technical assistance activities related to urban resilience. While using trust funds for upstream analytical work is a normal practice in the World Bank, in the case of urban resilience, new multisectoral resilience projects are highly dependent on these upstream assessments (that is, vulnerability assessments) for project selection and design. In the short term, this funding modality can help the World Bank to demonstrate the long-term benefits of investing in resilience building. However, over time, there will be a need to shift to World Bank budget, private capital, and client financing arrangements where feasible.

At the portfolio level, the incremental administrative costs of mainstreaming resilience are relatively high compared with standard administrative costs. In the World Bank, the SURR and Transport GPs have partnered to mainstream resilience into transport operations, after the World Bank's reorganization in 2014. The partnership is focusing on strengthening four key areas of transport resilience, namely (i) asset management, (ii) systems planning to detect weaknesses and to build redundancy, (iii) integrating risk into engineering design, and (iv) contingency planning. For FY14–18, this partnership has mainstreamed resilience activities into 30 transport operations in urban areas. For IDA operations, many in small island states, trust funds have contributed 42 percent of the World Bank's administrative costs associated with the preinvestment and implementation support of transport projects that mainstream resilience activities (table 4.1). Trust funds contributed much larger amounts for technical assistance and knowledge products, from between 94 percent and 100 percent of expenditures.

TABLE 4.1 | Trust Fund Contributions to the World Bank’s Resilient Transport Partnership, FY14–18

Type of Activities	Projects (no.)	Expenditures/Disbursements (\$)			Share of Total (percent)	
		BB	BETFs	Total	BB	BETFs
IDA projects	20	10,810,696	7,889,315	18,700,012	58	42
IBRD projects	8	4,782,010	1,572,559	6,354,570	75	25
RETF projects	2	35,428	547,024	582,452	6	94
Research activities	1	655,560	1,173,851	1,829,411	36	64
Knowledge products	2	0	1,122,265	1,122,265	0	100
Technical assistance	5	102,535	1,679,478	1,782,013	6	94
Total	38	16,386,230	13,984,492	30,370,723	54	46

Source: Independent Evaluation Group.

Note: These are the self-identified projects and activities, identified as part of the World Bank’s Resilient Transport Partnership Program by the partnership team. The IEG assessment separated out “urban” from “rural” activities. The World Bank’s Resilient Transport Database can be accessed at <https://worldbankgroup.sharepoint.com/sites/gsg/RDRM/Pages/FocusAreas/Disaster%20Risk%20Management%20in%20Transport%20Sector.aspx>.

BB = Bank Budget; BETF = Bank-Executed Trust Fund; IBRD = International Bank for Reconstruction and Development; IDA = International Development Association; RETF = Recipient-Executed Trust Funds.

While the World Bank is beginning to mainstream resilience activities in its transport sector, the dependence on trust funds presents a challenge for scaling up this initiative. An analysis of the wider transport portfolio not included in table 4.1 ( $n = 61$ , approved between FY15 and FY17) revealed no detectable pattern for financing resilience risks, apart from the focus detected on small island states. Of the 25 trust funds contributing to the administrative costs of these 61 projects, the GFDRR contributed the largest amount (\$2.97 million out of \$13.1 million, or 23 percent), followed by the Public-Private Infrastructure Advisory Facility (\$1.45 million, or 11 percent).

## Catastrophe Drawdown Options and Contingency Emergency Response Components

The catastrophe deferred drawdown option (CAT DDO) is an option under OP8.60 available for International Bank for Reconstruction and Development countries to provide liquidity immediately after disasters or health-related emergencies. Starting in FY18, the CAT DDO was offered to IDA countries too. The purpose of a CAT DDO is to help governments make systemic and institutional improvements in their emergency response capacity in their jurisdictions.

World Bank assistance to Colombia has included two CAT DDOs that were rated satisfactory by IEG. Fully used to help finance the government’s response to La Niña–related flooding in 2010–11, IEG

found that the instrument significantly expanded disaster monitoring stations and provided better and more timely information on seismic and hydro meteorological conditions, making it possible to know more precisely who was at risk and what risks they faced. Relatedly, Colombia made significant strides in improving the legal and institutional framework for DRM (World Bank 2017c).

The World Bank launched the Contingency Emergency Response Component (CERC) to promote adaptive management in response to acute shock. The World Bank introduced the CERC (initially called the Immediate Response Mechanism) in 2011 to enable IDA countries to rapidly access undisbursed IDA balances in response to natural disasters. Once specific prior actions are met, the CERC provides for pooling of uncommitted resources across projects to allow IDA countries to make use of \$5 million or 5 percent of undisbursed funds soon after an emergency (World Bank 2017c).<sup>1</sup>

For FY17–18, 60 projects incorporated CERCs, mostly in IDA countries, but only two, in Myanmar and Haiti, were triggered. Myanmar reprogrammed \$65 million from ongoing projects to support reconstruction and recovery efforts in the aftermath of floods and landslides that hit Myanmar during July to September 2015. Haiti also used the CERC mechanism after Hurricane Matthew in October 2016.

The underlying concept of the tool is relevant, but none of the projects with CERCs include an articulated contingency plan, even for countries that have multiple CERCs in projects across the portfolio. IEG’s 2007 disaster evaluation highlighted the negative effects of reallocating money from existing programs into disaster response and reconstruction: it can strip momentum away from institution- and capacity building initiatives that are critical to building resilience in the longer term. Because the CERC is a new instrument, the efficiency of its reallocation process will need to be assessed.

## IFC’s Resilience Partnership with the Rockefeller Foundation

IFC’s Cities Initiative is supported by a grant program made available from the Rockefeller Foundation that aims to support resilience building in IFC activities. The eligibility criteria are loosely aligned to resilience themes. In a first phase, Rockefeller contributed \$10 million, with the aim of leveraging an additional \$40–\$90 million to build demand for some 80 medium- to large-scale resilience projects globally. However, as of December 2017, IFC was only able to allocate \$3.5 million to 12 projects, across three Business Units: Public-Private Partnership (PPP) Advisory, Cities Initiative investment and advisory, and InfraVentures. These included transport, power, water, waste management, housing, and financial institution projects.

IFC advisory and investment projects that have accessed the Rockefeller Foundation grant finance partnership are at least partially linked to activities that contribute to resilience building at the municipal level. A “screen” developed to guide the use of Rockefeller Foundation grants has connected the grant funding to operations, including those addressing rainfall flooding in Lagos and Nairobi, coastal and rainfall flooding in Accra and Durban, affordable housing in Kigali, and solid waste management in Belgrade.

However, because of the low level of disbursements and the way that the funds are being used, it is unclear that the partnership is meaningfully contributing to resilience features in IFC's operations. In half of the cases, Rockefeller Foundation funds were used to mitigate social risks, in line with performance standards, in Belgrade, Cap-Haïtien, the West Bank, and Cartagena. In the West Bank and Gaza, and in Cartagena, BRT-related PPP advisory projects used the funds to procure social specialists to help manage unemployment, retrenchment, and economic displacement risks, and to develop a stakeholder engagement plan, outreach, and communication strategies. In Haiti, a proposed port rehabilitation project required a specialized stakeholder engagement to negotiate terms between business owners and the municipality. But this process was inadequate in the face of political economy challenges associated with the port.

The Rockefeller Foundation funds are being used similarly to "nonresilience funds," such as the Infrastructure Development Collaboration Partnership Fund (the European Commission's dedicated International Cooperation and Development Directorate-General). The funds from the Rockefeller Foundation and the Infrastructure Development Collaboration Partnership Fund are used interchangeably, even though the latter is designed to facilitate private sector participation in infrastructure projects through advice on transaction structuring and design in PPPs. IFC staff use both funds to finance consultant fees for legal, Environmental and Social Performance Standards, and advisory services, particularly for PPPs.

Municipal clients in Durban who accessed the Rockefeller Foundation fund, who were interviewed for this assessment, felt that it facilitated a "more neutral space within the municipal system (because it is not driven by core funding) to test ideas." The funding brought new partnerships and helped broker trust. In Durban, it linked sectors in a resilience dialogue: people were talking "brown and green as part of the same team working together on energy." Efforts to simplify the dialogue, however, by forcing a standard definition and technical or operational response could be "potentially dangerous" from a political and social viewpoint, according to municipal interviews. A key lesson from Durban is that international initiatives that apply a universal standard for urban resilience miss the different perspectives between developing and developed countries, including about timelines and political processes.

The evaluation revealed a missed opportunity to link the Rockefeller Foundation grants with the strategy and planning financed by the Rockefeller Foundation at the city level, in Ramallah, Durban, Belgrade, and Kigali. The facility included a target to commit 20 percent of its funds to activities in Rockefeller's 100 Resilient Cities program. However, at the time of the evaluation, only 54 percent of the funds had been committed to six projects in cities taking part in the 100 Resilient Cities program. In Ramallah, meetings between IFC and the Chief Resilience Officer yielded useful introductions to the Ministry of Transport, but not for urban resilience planning purposes. In Durban, philosophical differences between the municipality and 100 Resilient Cities led the city to withdraw from the program.

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<sup>1</sup> The specific objective of the Contingency Emergency Response Component (CERC) mechanism is to strengthen a country's emergency preparedness and response capacity. CERCs typically take the form of a zero-budget contingent window, but can also have preallocated funding amounts, or a combination of both. When a CERC is activated, uncommitted funds can be reallocated and accessed quickly without the need for formal restructuring, to provide a swift response in the event of emergency. A CERC can finance works, goods, services, training, or operating costs for such activities as the rebuilding or restoration of physical assets; means of production and economic activities; preserving or restoring essential services and facilitating peace building; building capacity for longer-term reconstruction, disaster management, and risk reduction; establishing and preserving human, institutional, and/or social capital, including economic reintegration of vulnerable groups.

# 5

## Conclusions and Recommendations

**URBAN RESILIENCE** is part of the wider resilience-building aim of the Bank Group's "Forward Look." The World Bank has been innovating with different approaches to building resilience in cities with varying needs and capacities. Because resilience building requires "learning by doing," these innovative efforts, which include cross-sectoral collaboration, are relevant and should be fostered. However, there is no framework, or process, in place to understand and assess the extent to which these innovations are contributing to resilience building within urban systems, over time.

Notwithstanding the existence of a definition in its analytical work, the Bank Group lacks a shared understanding of "urban resilience," that is, the term, scope, and approach.

The evaluation process demonstrated that the Bank Group's approach to urban resilience needs to address *chronic stresses* in line with client needs, in addition to *acute disaster shocks*. Such chronic stresses that occur at the urban system level include water scarcity and drought, pandemics, high levels of crime and violence, and pollution, among others. Any approach needs to be "people-centric" and offer nature-based solutions.

There is an organizational challenge since many communities of practice in the World Bank engage in resilience activities, but "resilience" is identified with one GP (in the SURR). There are also no stated roles for IFC and MIGA. Clients expressed the need for flexibility, prioritization, and a consideration of what can realistically be achieved in light of existing political and fiscal constraints.

All these factors are limiting the Bank Group's ability to identify and learn from various approaches to building urban resilience across GPs and institutions and to assess progress against its corporate resilience goals.

**Recommendation 1.** The Bank Group should systematically identify and track progress of interventions that build urban resilience to chronic stresses and acute shocks, across its institutions.

There has been increasing integration of resilience characteristics in assessed operations that are likely to lead to more resilient outcomes. However, as measured at appraisal, the inconsistent integration of resilience characteristics in projects financing the same type of activities is leading to differentiated solutions that may not be optimal from a resilience perspective. Factors driving differentiated designs in projects financing the same type of activities are associated with skill mix and team composition.

**Robustness.** Since 2007, project appraisal documents increasingly refer to design standards in line with resilience risks (for example, flood protection design standards and building codes). However, the application of these standards is inconsistent within sectors and across GPs financing the same type of activities. Projects are increasingly indicating how infrastructure is adjusted to mitigate resilience risks, but not the degree of risk tolerance.

The identification of resilience risks as integral to a project's economic analysis has risen over the two periods (from 49 percent to 68 percent), but the incorporation of these risks into cost-benefit analysis has not been proportional (from 30 percent to 37 percent). The underestimation of costs and the overestimation of benefits risks producing an inaccurate assessment of project viability from a resilience perspective.

**Coordination.** In urban systems, interagency coordination is critical for detecting gaps in infrastructure and service coverage, identifying funding needs and responsibilities, and clarifying mandates across sector agencies. However, project-financed activities in support of interagency and interjurisdictional coordination have declined in some sectors, and this undermines the potential of projects to contribute to system-level resilience.

**Inclusion.** Across the three key GPs poverty targeting and gender integration have improved, but while projects increasingly recognize the vulnerability of excluded groups (the elderly, persons with disabilities, youth, and so on) they often do not provide dedicated support, which leads to an inequitable distribution of resilience benefits.

**Recommendation 2.** The design and implementation of World Bank projects that build urban resilience should systematically incorporate resilience characteristics and articulate their application throughout the project cycle. These should include the following: (i) design standards in line with resilience risks, (ii) cost-benefit analysis in line with resilience risks, (iii) city and interjurisdictional coordination, and (iv) inclusive approaches for vulnerable people.



The World Bank has played a strong role through its analytical and capacity building work on urban crime and violence, including by helping clients to identify drivers and economic costs. In Latin American cities, technical assistance programs have built client capacity. Participatory, multisector approaches that adapt the built environment and target at-risk groups have resulted in perceptions of increased safety. Attribution is an issue because many factors affect crime and violence. To date, most of the World Bank's tools, expertise, and assistance has been developed for the Latin American region. Yet crime and violence risks are increasingly undermining urban resilience in other regions, which will require a broadening of the tool kit and approach.

**Recommendation 3.** In urban areas where the client has identified crime and violence as a resilience risk, the World Bank's support should be based on a localized typology of crime and violence that is informed by relevant analytical work. This approach should be supported by an assessment of the mechanisms most effective at reducing crime and violence within operations.

The Bank Group does not systematically assess urban resilience risks at the city system level: the treatment of resilience risks tends to be unbalanced and the city portfolios show significant gaps. Sectors identify risks that are linked to the design of sector investments, but do not identify urban system risks. *Urbanization Reviews*, the flagship urban analytical tool, is not designed to assess resilience risks. An examination of different entry points used by the Bank Group in urban areas provides illustrative examples of how these have led to varying levels of urban resilience. These show the importance of system-level risk identification, multisectoral coordination, and a sustained, phased approach that adapts to changing circumstances.

**Recommendation 4.** When the Bank Group finances multiple interventions that build urban resilience in a country, such a portfolio of interventions should be informed by diagnostics of urban system risks, to ensure that they are complementary and coordinated. As part of this effort to build urban resilience, emphasis should be placed on developing sustained engagements to help cities adapt and transform in the face of stresses and shocks.

IFC's Cities Initiative is well poised to help municipal clients achieve urban resilience, but it does not use resilience risk assessments with municipal clients in this initiative. Its investments in Izmir improved municipal services, but without a resilience risk-informed urban planning model, robustness (seismic risk) and inclusion were lacking. Though these interventions enhanced the use of data for decision-making, the municipal role in maintaining and managing data systems was underemphasized.

**Recommendation 5.** IFC should support its public and private sector Cities Initiative clients through available resilience risk assessment and mitigation tools to strengthen

development impacts. In doing so, IFC should coordinate with the World Bank and MIGA to identify opportunities for leveraging knowledge and skills, including those on urban data management.

The Bank Group's financing plan for urban resilience building is unclear. The World Bank has pronounced an aim to crowd in \$500 billion for urban resilience in 500 cities and to remove 50 million people from poverty by 2035, but the capital mobilization strategy is not articulated. Efforts to date reveal a dependency on trust funds for mainstreaming resilience activities, including in support of mainstreaming resilience into the preinvestment and implementation support for projects.

**Recommendation 6.** The World Bank and IFC should articulate long-term financing plans for building urban resilience in line with stated aims, aligned with client financial needs and the nature and magnitude of their resilience risks.

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## APPENDIXES

# Building Urban Resilience

An Evaluation of the World Bank Group's  
Evolving Experience (2007–17)



**IEG**  
INDEPENDENT  
EVALUATION GROUP

**WORLD BANK GROUP**  
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**WHAT  
WORKS**



# Appendix A. Methodology

## Purpose and Evaluation Questions

The purpose of this evaluation was to provide evaluative insights on how, and to what extent, the World Bank Group is helping clients to foster urban resilience in the face of shocks, threats, and chronic stress. This overarching objective inspired two lines of inquiry that guided the data collection and analysis process, as well as the framing of findings and recommendations (box A.1).

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### Box A.1. Lines of Enquiry Guiding the Evaluation

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**Overarching Question.** The overarching question of the evaluation is: How, and to what extent, is the World Bank Group effectively helping clients to achieve urban resilience outcomes in response to shocks and chronic stress?

The overarching question is supported by two main evaluation questions:

**Question 1:** How and how well have World Bank Group activities contributed to the development of resilience characteristics of client urban systems and to their ability to cope, adapt, or transform when facing or anticipating shocks and threats?

**Question 2:** How and to what extent is the World Bank Group effectively leveraging its knowledge, human capital, and financial resources to help clients achieve urban resilience in the face of shocks and threats?

*Source:* Independent Evaluation Group.

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## Methodological Design and Building Blocks

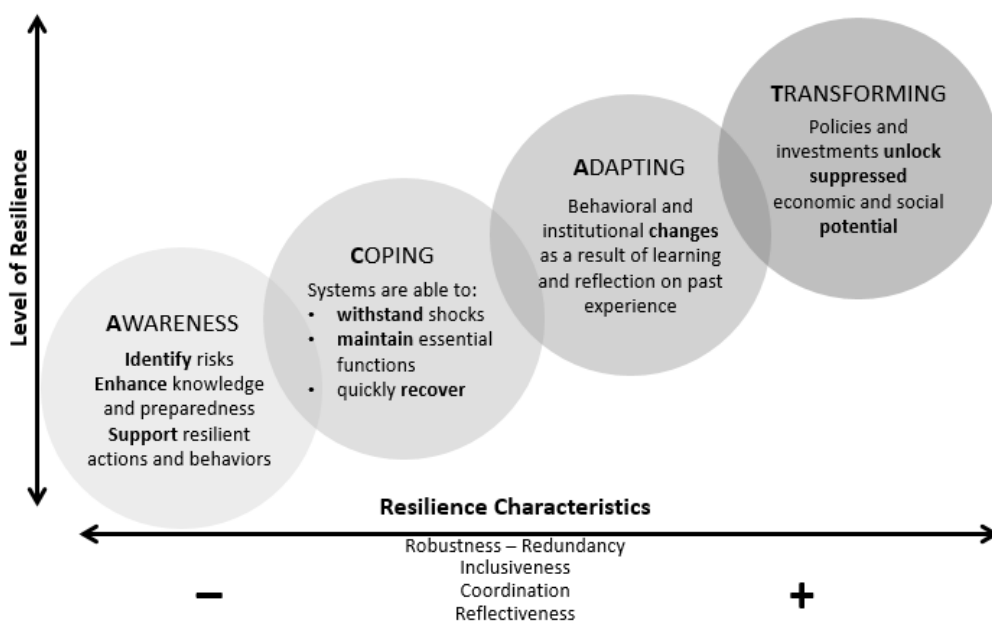
In the absence of an institutional process to benchmark urban resilience aims, this evaluation built on internal knowledge and relevant external literature to develop and offer the World Bank Group a two-part framework for assessing urban resilience at the operational and system levels. First, it includes five resilience characteristics that were applied at the operational level that are empirically derived from the literature on resilience systems and from cities. These are

- **Robustness:** Integrity and strength of infrastructure and a system, in relation to standards, its reliability and ability to absorb and withstand shocks.
- **Inclusion:** Equity in access to infrastructure and services for the vulnerable underpins quality of life, economic opportunities, and social cohesion.
- **Redundancy:** Spare capacity or backup systems that enable continuity of service in the event of shocks.
- **Coordination:** between agencies and systems, includes knowledge sharing, collaborative and strategic planning, and interoperational responses.
- **Reflectiveness:** Resilient urban systems examine, learn, and evolve based on shared knowledge and experience.

Second, it includes a systems-level analysis developed to assess the World Bank Group’s contribution to urban resilience along a continuum that can be applied sectorally or spatially. These are

- **Awareness raising:** Contributes to the identification of risks in a timely way, enhances preparedness, and supports changed, more resilient, behavior at multiple levels.
- **Coping:** Systems and their composite parts withstand shocks while providing essential functions, allowing for recovery over time.
- **Adapting:** Evidence of systemic shifts—both institutional and within the built environment—that permit an urban system and its composite parts to absorb and withstand shocks and chronic stress, while maintaining essential functions and enabling swift recover.
- **Transforming:** Policies and investments are adapted so that urban systems absorb or avert shocks and stresses while developing. Suppressed economic and social potential is unlocked through multiuse infrastructure; risk-sensitive land use planning; and cohesive social policies.

Figure A.1. A Systems-Level Urban Resilience Framework: A Continuum Driven by Resilience Characteristics



Source: Independent Evaluation Group.

Note: ACAT = awareness raising, coping, adapting, and transforming.

## Part I Operational Level: Portfolio Identification and Analysis

Due to the multidimensional nature of resilience, the evaluation took a cross-sectoral approach. While the Social, Urban, Rural, and Resilience Global Practice (GP) is the main technical counterpart, this

evaluation also includes an analysis of projects implemented in urban areas by the Transport and Water GPs. The GPs were chosen based on their relative urban lending volumes and their “footprint” on the built environment.

Due also to the evolving nature of urban resilience in the World Bank, the evaluation conducted a **design analysis** of all projects being implemented in urban areas by the three GPs that were approved between FY15 and FY17. The evaluation identified 147 projects that were approved during this period. The analysis is designed to benchmark the current level of integration of resilience characteristics prior to midterm, to support learning and adaptive management in a timely way.

To better understand the nature of the World Bank’s evolving approach, the evaluation also undertook a **comparative analysis** of all projects that were implemented in urban areas by the same three GPs that were approved one project period prior (FY07–09). The evaluation identified these “like” projects by mapping the GP/Sector Board/subsector, and theme and by comparing component activities. The evaluation identified 88 projects that were approved during this period.

Within the GPs, projects being implemented in urban areas are mapped to different sectors as shown in table A.1.

**Table A.1. Urban Resilience Evaluation Portfolio Review Sample**

Global Practice and Sector	Design Analysis FY15–17		Design Analysis 17		Comparative Analysis FY07–09	
	Non-AF		AF		Non-AF	
	(no.)	(\$, millions)	(no.)	(\$, millions)	(no.)	(\$, millions)
Water GP: Water Supply and Sanitation	25	3,809	14	1,023	36	2,887
Water GP: Flood and Drought	7	1,700	-	-	3	417
SURR GP: Flood and Drought	15	1,796	6	79	5	316
SURR GP: Housing and Settlements	8	1,497	2	208	6	491
SURR GP: Urban Upgrading	12	1,574	7	468	16	1,247
Transport GP: Urban Transport	20	3,371	3	130	14	1,804
Transport GP: Roads and Highways	7	795	6	366	6	645
SURR GP: City-Wide Transport Infrastructure	8	911	7	155	2	210
Subtotal	102	15,453	45	2,429	88	8,017
Total	235 projects (\$25,899 million)					

Source: Independent Evaluation Group.

Note: An additional 29 projects were reviewed during the portfolio desk review to support the case study cities analysis. AF = additional financing; GP = Global Practice; SURR = Social, Urban, Rural, and Resilience.

A coding template was developed to capture the diverse nuances of the five resilience characteristics as manifested in project-financed activities to mitigate urban risks (box A.2.). Coding was distributed among five coders, supervised by the task team leader (TTL). Training was organized and intercoder reliability was ensured through a piloting phase as well as periodic quality assessment and spot-check by the TTL. The review used the project appraisal document or project paper as the key unit of analysis since these inform the legal agreement and are the basis for self-evaluation and evaluation in the World Bank. Illustrative examples of the coded activities aligned with the characteristics are also provided (table A.2).

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### Box A.2. Portfolio Review: Key Queries Corresponding to the Urban Resilience Characteristics

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- i. **Robustness. Deals with the strength of the system, its reliability, and its ability to absorb and withstand disturbances.** The review explored whether the projects: (i) refer to standards, for example, national, international, and so on; (ii) refer to standards for infrastructure that include risk tolerance in the face of shocks; (iii) describe how infrastructure work will adjust for any risk-resilient considerations; (iv) include risk-sensitive land use planning for project infrastructure and in general; and (v) support asset management.
- ii. **Inclusiveness. Equity in access to infrastructure and services underpins social cohesion and opportunity.** The review explored which vulnerable groups the projects explicitly intend to support (for example, the poor, women, the elderly, persons with disabilities, youth, children, minorities, displaced persons) and how (participation, skills training, vulnerability-sensitive design, and so on). The analysis distinguishes between projects in terms of whether they: (i) do not acknowledge the vulnerable group (♥); (ii) acknowledge the vulnerable group but do not explicate how their needs will be supported (—); (iii) acknowledge the vulnerable group and finance activities to support their specialized needs (🔧); and (iv) acknowledge the vulnerable group, finance activities to support their specialized needs, and include an indicator to track progress (📈).
- iii. **Coordination.** Coordination between systems and agencies means that knowledge is shared, planning is collaborative and strategic, and responses are integrated for mutual benefit. The review explicitly took stock of financed activities aiming to improve intra-agency roles and responsibilities, interagency collaboration and information sharing, through to systems-level coordination.
- iv. **Reflectiveness. Resilient urban systems examine, learn, and evolve based on their past experiences.** The review assessed: (i) which reflectiveness tools are being financed; (ii) how these tools are being used, particularly for decision-making purposes; (iii) whether capacity building is being provided for the utility and maintenance of the tools; and (iv) at what level the tools are being established (for example, village, municipal, regional, national, and so on).
- v. **Redundancy.** Provisions for spare capacity or backup systems that enable continuity of service or functionality in the event of a disturbance or increase in demand. The review took stock of how projects are financing backup systems across different sectors.

Source: Independent Evaluation Group.

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**Table A.2. Illustrative Examples of Urban Resilience Characteristics in Projects Across Sectors**

<b>Global Practice and Sector</b>	<b>Robustness</b>	<b>Inclusiveness</b>	<b>Coordination</b>	<b>Reflectiveness</b>	<b>Redundancy</b>
Water GP: Water Supply and Sanitation	Water quality standards; “safely managed” water supply and sanitation; provisions for climate change projections	Gender-informed hygiene awareness programs; creation of employment for vulnerable groups through public facilities	Sharing of water quality data between water utilities and environment and health authorities	Real-time water quality monitoring; GIS-based planning/management; metering devices; supervisory control and data acquisition (SCADA)	System design allows for future expansion based on projected demand; backup transmission lines
Water GP and GPSURR: Flood and Drought	Flood protection standards (for example, 1-in-100 year); risk-sensitive land use planning and construction	Emergency preparedness plans include considerations for vulnerable groups (for example, the elderly, persons with disabilities, children)	Integrated disaster preparedness and response systems with service delivery agencies	Hydrometeorological information systems; early warning systems; GIS-based planning/management; flood risk mapping	Emergency preparedness plans; emergency response capacity; disaster risk insurance
GPSURR: Housing and Informal Settlements	Building codes; seismic design; risk-sensitive land use planning and construction	Equal access to mortgage assistance; participatory community upgrading plans; local consultative forums	Coordination between housing, planning agencies, and social line ministries or welfare agencies; community committees	Slum profiling database; national housing registry; community spatial plans; GIS-based planning/management	Access and evacuation routes
GPSURR: Urban Upgrading	Building codes; seismic design; risk-sensitive land use planning and construction	Participatory community upgrading plans; local consultative forums	Preparation of urban master plans; electronic construction permitting system	Urban management information system (UMIS); GIS-based planning/ management	Vulnerability assessment of critical facilities and lifelines
Transport GP and GPSURR: Urban Transport	Criticality assessment; risk assessment and land suitability; climate-proofed design	Accessibility guidelines; affordability; access to low-income areas; road safety education with a focus on vulnerable groups	Use of information systems for coordinated planning and strategic decision-making	Intelligent transport systems; passenger information systems (PIS); SMS fault reporting; GIS-based planning/management	Multimodal transport; emergency response centers; disaster risk contingency funds

## Appendix A Methodology

Transport GP: Roads and Highways	Raised roads in anticipation of flooding; all- seasons roads	Highway exits and entrances at reasonable intervals and locations; safe road crossings	Cooperation between police, road safety authorities, and emergency services	Road asset management system (RAMS)	Alternate/detour routes; access points and flow links
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Source: Independent Evaluation Group.

Note: GIS = geographic information system; GP = Global Practice; GPSURR = Social, Urban, Rural, and Resilience GP; SMS = short messaging service.

### Inclusion

The World Bank report *Inclusion Matters* defines social inclusion as the process of improving the ability, opportunity and dignity of people disadvantaged on the basis of their identity to take part in society (World Bank 2013, xxiv). The group identities most commonly experiencing exclusion are gender, race, caste, ethnicity, religion, and disability status. In resilient urban planning, it is important to ensure that the poor and the most vulnerable are given a role in decision-making—to ensure that the unique risks faced by these groups are adequately identified and addressed. Many policies and planning initiatives do not properly consider the important economic, social, and cultural contributions of low-income urban areas. This is made more challenging by the low visibility of the informal sector in urban planning and policy-making processes, sometimes because informal dwellers calculate the risks of “being counted.”

### Methodology

The urban resilience evaluation portfolio review screened all projects in the design analysis (FY15–17) and comparative analysis (FY07–09, see appendix C) for the following:

- Which vulnerable groups the projects explicitly intend to support, that is, the poor, women, the elderly, persons with disabilities, youth, children, minorities, displaced persons, and migrants;
- How these groups will be supported through financed activities, for example, skills development and training, vulnerability-sensitive design, perception of services, and so on; and
- How the projects are tracking disaggregated progress on the activities that support specific vulnerable groups, that is, indicators in the results framework. This does not include indicators for overall participation (for example, number of beneficiaries, of which 50 percent are women) as this insufficiently quantifies potential outcomes.
- For each vulnerable group, the analysis distinguishes whether the project:
  - i. Acknowledges the vulnerable group, finances one or more activities to support their specialized needs, and includes one or more disaggregated indicators to track progress (↑);
  - ii. Acknowledges the vulnerable group and finances one or more activities to support their specialized needs but does not track progress (↔);



iii. Acknowledges the vulnerable group but does not explicate how they will be supported by the project or track progress (→); or

iv. Does not acknowledge the vulnerable group, finance activities, nor track progress (↓).





The next sections provide a summary of the design analysis data (FY15–17), as well as illustrative examples from the same data set.

Design Analysis (FY15–17) Data

Table A.3. Summary of Design Analysis (FY15–17) Inclusiveness Data

	The Poor	Women	The Elderly	Persons with Disabilities	Youth/Children	Minorities/Ethnic Groups	Displaced/Migrants
<b>KEY</b>							
	Group acknowledged, activity financed and measured						
	Group acknowledged, activity financed but NO measurement						
	Group acknowledged but NO activity financed and NO measurement						
	Group NOT acknowledged, NO activity and NO measurement						
Water GP: Water Supply and Sanitation							
Lebanon: Water Supply Augmentation							
Ethiopia: Second Ethiopia Urban Water Supply and Sanitation							
Tanzania: Second Water Sector Support							
Zambia: Lusaka Sanitation							
Guinea: Urban Water							
Angola: Second Water Sector Institutional Development							
Liberia: Urban Water Supply							
Mozambique: Water Services and Institutional Support II							
Sri Lanka: Water Supply and Sanitation Improvement							
Kenya: Water and Sanitation Development							
Colombia: Plan PAZcifico: Water Supply and Basic Sanitation Infrastructure							
Vietnam: Coastal Cities Sustainable Environment							
Papua New Guinea: Water Supply and Sanitation Development							
Panama: Burunga Wastewater Management							





**KEY**

-  Group acknowledged, activity financed and measured
-  Group acknowledged, activity financed but NO measurement
-  Group acknowledged but NO activity financed and NO measurement
-  Group NOT acknowledged, NO activity and NO measurement

	The Poor	Women	The Elderly	Persons with Disabilities	Youth/Children	Minorities/Ethnic Groups	Displaced/Migrants
India: Karnataka Urban Water Supply Modernization							
Kenya: Coastal Region Water Security and Climate Resilience							
China: Qinghai Xining Water Environment Management							
Vietnam: Second Ho Chi Minh City Environmental Sanitation							
Côte d'Ivoire: Urban Water Supply							
Benin: Small Town Water Supply and Urban Septage Management							
Ecuador: Guayaquil Wastewater Management							
Senegal: Urban Water and Sanitation							
Kenya: Urban Water and Sanitation Output-Based Aid Fund for Low-Income Areas							
West Bank and Gaza: Hebron Regional Wastewater Management							
China: Guilin Integrated Environment Management							
<hr/>							
Water GP: Flood and Drought							
Argentina: Flood Risk Management Support Project for...Buenos Aires							
Serbia: Floods Emergency Recovery							
China: Chongqing Small Towns Water Environment Management							
Argentina: Salado Integrated River Basin Management Support							
Botswana: Emergency Water Security and Efficiency							





Appendix A  
Methodology

**KEY**

-  Group acknowledged, activity financed and measured
-  Group acknowledged, activity financed but NO measurement
-  Group acknowledged but NO activity financed and NO measurement
-  Group NOT acknowledged, NO activity and NO measurement

	The Poor	Women	The Elderly	Persons with Disabilities	Youth/Children	Minorities/Ethnic Groups	Displaced/Migrants
Poland: Odra-Vistula Flood Management							
Vietnam: Vinh Phuc Flood Risk and Water Management							
<hr/>							
SURR GP: Flood and Drought							
Pakistan: Sindh Resilience Project (SRP)							
Pakistan: Disaster Resilience Improvement Project							
Vietnam: Can Tho Urban Development and Resilience							
Bangladesh: Multipurpose Disaster Shelter Project							
Belize: Climate-Resilient Infrastructure							
Haiti: Municipal Urban Management and Resilience Project							
Myanmar: Southeast Asia Disaster Risk Management (SEA DRM) project							
Malawi: Drought Recovery and Resilience Project							
Somalia: Emergency Drought Response							
China: Ningbo Sustainable Urbanization Project							
Haiti: Strengthening Hydro-Meteorological Services Project							
Bangladesh: Weather and Climate Services Regional Project							
India: Jhelum and Tawi Flood Recovery Project							
Jamaica: Disaster Vulnerability Reduction Project							





**KEY**

-  Group acknowledged, activity financed and measured
-  Group acknowledged, activity financed but NO measurement
-  Group acknowledged but NO activity financed and NO measurement
-  Group NOT acknowledged, NO activity and NO measurement

	The Poor	Women	The Elderly	Persons with Disabilities	Youth/Children	Minorities/Ethnic Groups	Displaced/Migrants
Morocco: Integrated Disaster Risk Management and Resilience Project-for-Results							
<b>SURR GP: Housing and Informal Settlements</b>							
Indonesia: National Affordable Housing Program Project							
Bangladesh: Pro-Poor Slums Integration Project							
Argentina: Metropolitan Buenos Aires Urban Transformation Project							
Mexico: Improving Access to Affordable Housing Project							
Congo: Urban Development and Poor Neighborhood Upgrading Project							
Argentina: Integrated Habitat and Housing Project							
Indonesia: National Slum Upgrading Project							
Nepal: Earthquake Housing Reconstruction Project							
<b>SURR GP: Urban Upgrading</b>							
Turkey: Sustainable Cities Project							
China: Huainan Mining Area Rehabilitation Project							
China: Shaanxi Small Towns Infrastructure Project							
Afghanistan: Urban Development Support Project							
Georgia: Regional and Municipal Infrastructure Development II							
Bangladesh: Urban Resilience Project							





Appendix A  
Methodology

**KEY**

-  Group acknowledged, activity financed and measured
-  Group acknowledged, activity financed but NO measurement
-  Group acknowledged but NO activity financed and NO measurement
-  Group NOT acknowledged, NO activity and NO measurement

	The Poor	Women	The Elderly	Persons with Disabilities	Youth/Children	Minorities/Ethnic Groups	Displaced/Migrants
Somalia: Somali Urban Investment Planning							
India: TN Sustainable Urban Development Program							
Gabon: Infrastructure and Local Development Project II							
Kyrgyz Republic: Urban Development Project							
Indonesia: Regional Infrastructure Development Fund							
Iraq: Emergency Operation for Development							
<hr/>							
Transport GP: Urban Transport							
China: Wuhan Integrated Transport Development Project							
India: Efficient and Sustainable City Bus Service							
Senegal: Dakar Bus Rapid Transit (BRT) Pilot Project							
Philippines: Cebu BRT							
Philippines: Metro Manila BRT Line 1							
China: Tianjin Urban Transport Improvement Project							
Morocco: Urban Transport (P4R)							
Peru: Lima Metro Line 2 Project							
Vietnam: Ho Chi Minh City Green Transport Development Project							
China: Zhengzhou Urban Rail Project							





**KEY**

-  Group acknowledged, activity financed and measured
-  Group acknowledged, activity financed but NO measurement
-  Group acknowledged but NO activity financed and NO measurement
-  Group NOT acknowledged, NO activity and NO measurement

	The Poor	Women	The Elderly	Persons with Disabilities	Youth/Children	Minorities/Ethnic Groups	Displaced/Migrants
Ecuador: Urban Transport							
Ethiopia: Urban Transport							
China: Gansu Rural-Urban Integration							
China: Urumqi Urban Transport Project II							
China: Anhui Road Maintenance Innovation							
Congo: DRC-Goma Airport Project							
Nicaragua: Rural and Urban Access Improvement Project							
Tanzania: Dar es Salaam Maritime Gateway Project							
China: Hubei Xiaogan Logistics							
Tanzania: Dar es Salaam Urban Transport Improvement Project							
<hr/>							
Transport GP: Roads and Highways							
Georgia: Secondary Road Asset Management Project							
Sri Lanka: Transport Connectivity and Asset Management Project							
Ghana: Transport Sector Improvement Project							
Burundi: Infrastructure Resilience Emergency							
Albania: Results-Based Road Maintenance and Safety Project							
Ethiopia: Expressway Development Support Project							

Appendix A  
Methodology

**KEY**

-  Group acknowledged, activity financed and measured
-  Group acknowledged, activity financed but NO measurement
-  Group acknowledged but NO activity financed and NO measurement
-  Group NOT acknowledged, NO activity and NO measurement

	The Poor	Women	The Elderly	Persons with Disabilities	Youth/Children	Minorities/Ethnic Groups	Displaced/Migrants
Central African Republic: Local Connectivity Emergency Project							
<hr/>							
SURR GP: Urban Transport							
Tanzania: Dar es Salaam Metropolitan Development Project							
Belize: Climate-Resilient Infrastructure							
China: Sichuan Chongqing Cooperation: Guang'an Demonstration Area Infrastructure Development Project							
China: Ningbo Sustainable Urbanization Project							
Rwanda: Urban Development Project							
Burkina Faso: Transport and Urban Infrastructure Development							
Vanuatu: Vanuatu Reconstruction Project							
Pakistan: Karachi Neighborhood Improvement Project							

Source: Independent Evaluation Group.

Note: GP = Global Practice; SURR = Social, Urban, Rural, and Resilience.



Illustrative Examples of Targeted Support for Inclusive Approaches in Water, Transport, and SURR Projects in Urban Areas (FY15–17)

*Gender*

The Second Ethiopia Urban Water Supply and Sanitation Project (P156433) employs an appropriate targeting approach that includes: (i) creating opportunities for groups of women and unemployed youth, organized under small and micro enterprises, to manage and operate public toilets; (ii) adopting affordable and simple technologies that can be replicated at the community and household levels; (iii) locating public toilets at strategic places with concentration of people (for example, bus terminals, markets, public spaces, and religious activity centers); and (iv) investing in affordable and safely positioned public pay-and-use toilets and showers in low income areas, to be managed by women and youth-led community-based organizations. The project includes an indicator for “People trained to improve hygiene behavior or sanitation practices under the project (Female)”.

The institutional support component of the Mozambique Water Services and Institutional Support Project II (P149377) supports the development and implementation of corporate equal-opportunity policies/procedures (addressing issues of gender and disability in particular). This indicator will track progress with regard to institutional support for the regional utilities to develop and implement corporate policies and procedures that specifically address issues of gender inequality and disability. Equal participation and gender responsiveness will be reflected in project activities such as training; compensation for losing land, houses, or other assets; and activities related to raising disaster risk awareness by ensuring a balanced proportion of women beneficiaries. Gender-disaggregated indicators have been included in the results framework to assess the extent to which women have benefited equally from flood-prevention activities and received adequate compensation and resettlement measures to meet their needs.

The Urumqi Urban Transport Project II in China (P148527) will ensure that at least 30 percent of women are provided with work opportunities under the project and are paid the same as men for similar work. Women will also be given priority in training for temporary work and be consulted to ensure that they have the same rights as men to sign compensation agreements. For the training, at least 50 percent of the trainees will be women. In addition, the project will measure the number of females gaining direct access to the targeted bus rapid transit corridors in Urumqi.

China’s Ningbo Sustainable Urbanization Project (P149485) will focus on women during traffic safety education activities to raise awareness on self-protection. The project will implement activities by using the Urban Regeneration approach, which is a comprehensive package of investments in public infrastructure and service delivery in existing urban areas. Priority will be given to activities that provide lower-income households, migrant workers, and women with affordable transport options to travel to job centers, offer the elderly and the youth safe access to medical and educational institutions, and/or contribute to the preservation of cultural identity and improvements to social inclusion in local communities.

Bangladesh’s Pro-Poor Slums Integration Project (P130710) will ensure that all community groups, such as women, will be involved in the community upgrading plan. The plan will outline community plans to ensure inclusion of poor and vulnerable community members in planning and designing houses. In addition, the grievance redress committee will include women councilors to attend grievances from female complaints. Though many of the community representatives and leaders are women, the project will continue to build on identifying and prioritizing gender needs during community planning and development.

## Appendix A Methodology

The Can Tho Urban Development and Resilience Project in Vietnam (P152851) will help the women's unions to organize multiple trainings workshops on hygiene, sanitation, and waste disposal issues and gender-targeted information on flood risk and prevention at the household and community levels. Women's Unions will lead a campaign and training to promote a community-based approach to improve sanitation behavior and flood early warning actions.

### *Youth/Children*

The Transport Sector Improvement Project in Ghana (P151026) will support the "Lollipop Program" at about 500 schools to promote safe road crossings for pedestrians. The project will support the wider deployment of the ongoing Lollipop Program, targeting road crossing by children attending primary and junior secondary schools. This program provides roadside stands containing handheld stop signs that children wishing to cross the road hold out to encourage drivers to stop. Combined with the planned volunteer wardens and supportive teachers who train the children in proper use, the approach provides a comprehensive solution.

Burkina Faso's Transport and Urban Infrastructure Development Project (P151832) acknowledged that risk of accidents is most pronounced for road users, the residents along the roads, and for school children. In addition to technical designs to improve road safety, the project will finance awareness-raising events in schools and information on local radios, combined with speed control by radar.

Argentina's Integrated Habitat and Housing Project (P159929) highlighted that qualitative improvements in housing units are linked to a decreased incidence of digestive and respiratory illnesses, particularly in children and infants, including improvements in school attendance and performance rates. In response, the project aims to increase access to formal housing by allocating a higher subsidy amount to families with children.

The Infrastructure and Local Development Project II in Gabon (P151077) will ensure close collaboration with local youth organizations to ensure youth are included in local consultative forums. The concerns of youth will be fully integrated in both the planning process and in key decision-making processes.

Pakistan's Disaster Resilience Improvement Project (P154036) acknowledged that natural disasters disproportionately affect children. Experiences from other countries show that educating children and teachers on this subject greatly contributes to overall public understanding on what actions to take before, during, and after an emergency and saves more lives than just those of children. The project will rehabilitate infrastructure, which will assist in restoring people's livelihoods and bringing back a sense of normalcy to their communities. The project will also implement a school awareness program to teach students and teachers the disaster risks and actions required in emergencies to better understand and manage risks. This program will include school-based awareness on household-level risk reduction measures before, during, and after disasters; education on health issues during disasters; school disaster safety measures; communication of information to households and communities; and dissemination of disaster safety knowledge through informal means of communication.

### *The Elderly*

The Urumqi Urban Transport Project II (P148527) will finance about 152 articulated buses (18 meters) and 29 single buses (12 meters). Bus design includes low-floor setting for easy access from platforms, doors that open on both sides, and priority seating for the disabled and the elderly.

Indonesia's National Affordable Housing Project (P154948) will finance activities to ensure the elderly are given the same opportunities as other beneficiaries by lenders to access BP2BTs (Mortgage-Linked Down Payment

Assistance). The elderly and people with disability are eligible and allowed to use a maximum of 15 percent of assistance to pay labor.

#### *Persons with Disabilities*

The institutional support component of the Mozambique Water Services and Institutional Support Project II (P149377) supports the development and implementation of corporate equal-opportunity policies and procedures (addressing issues of gender and disability in particular). This indicator will track progress on institutional support for the regional utilities to develop and implement corporate policies and procedures that specifically address issues of gender inequality and disability.

To encourage low-income households to connect to the water systems, and to better explain the benefits and responsibilities of obtaining water service, the works contracts for network extensions in the Angola Second Water Sector Institutional Development Project (P151224) will include the carrying out of public consultation and education programs in each area of network expansion. Such campaigns may include a range of activities, as appropriate, including information campaigns, public hearings, distribution of posters and leaflets translated into the local language, interactive drama/theatre groups, and community dialogue initiatives with women and men. In addition, as an input into the design of network extensions, contractors will carry out a minimum of two information/consultation sessions in each subproject area. The first one will be offered to the general population, while the second one will exclusively target women. The objective of these working sessions will be to inform and obtain feedback about: (i) an adequate interface with the community to develop principles for community involvement, a participative framework, and mechanisms for community awareness and education; (ii) identification of community preferences and priorities with regard to the provision of water services, including target groups such as small, medium, and large enterprises, groups with special needs, such as low-income and vulnerable households (for example, the aged, HIV/AIDS-affected persons, and persons with disabilities), households outside the formal network, women, and the socially excluded; (iii) the role of the communities in construction oversight, as well as recurrent operation and maintenance of the systems; and (iv) an assessment of water-related education needs of the community.

The Lima Metro Line 2 Project in Peru (P145610) will finance construction of metro stations that will follow international standards of universal accessibility features to improve services to individuals with disabilities. These features include elevators or ramps, handrails on ramps and stairs, large-print and tactile signs, and audio and visual information systems, among others. All stations on line two will include features that improve accessibility for customers with temporary and permanent visual, hearing, and mobility disabilities.

Indonesia's National Affordable Housing Project (P154948) will finance activities to ensure disabled persons are given the same opportunities as other beneficiaries by lenders to access BP2BTs (Mortgage-Linked Down Payment Assistance). Persons with disability are eligible and allowed to use a maximum of 15 percent of assistance to pay labor.

#### *Minorities/Displaced*

The Multipurpose Disaster Shelter Project (P146464) in Bangladesh will finance activities for social inclusion and gender mainstreaming. Site-specific designs will ensure that the vulnerable section of the communities, including the very poor, women, traditional minority communities, tribal people with disability, and children get

## Appendix A Methodology

access to benefits. Communities from each such group will be engaged in the project cycle from identification to design and implementation, and their options will be given due consideration.

Component 1 of the Somalia Emergency Drought Response and Recovery Project (P163830)—Programmatic support to International Committee for the Red Cross for Immediate Drought Response—aims to provide support to more than 523,000 drought-affected beneficiaries. More specifically, the beneficiaries would include the following target populations:

- a. Internally displaced person (IDP) households—Populations displaced by the drought without adequate access and capacity to cover essential food and nonfood item needs after displacement because of loss of food stocks, properties, income, and productive assets.
- b. Host households/communities—Communities/settlements of IDPs in protracted displacement hosting drought-related IDPs without adequate food production and/or income capacities to cover their essential needs.
- c. Communities of pastoralists and agro-pastoralists that suffered major (more than 50 percent) or complete losses of their crops and livestock, and who are in need of external support to cover their basic food needs.
- d. Resident and IDP households of caretakers (pregnant and lactating women [PLW]) of malnourished children at the International Committee for the Red Cross–supported Stabilization Centers in Kismayo and Baidoa.

### Human Resources Analysis

To probe the issue of coordination, at the operational level, the evaluation undertook a human resources analysis that identified and compared the skill composition of project team members (including consultants) within the design analysis portfolio (FY15–17).

### Human Resources Analysis Methodology

The sample of lending projects selected for analysis met the criteria of being projects implemented in urban areas approved between FY15 and FY17. For each project the entire project team was identified, along with metadata on their roles, job titles, skills, and so on, to map them into different skill categories. The source of the data for the project team is the Operations Portal. This source provides more reliable information than the project appraisal document since there is a record of every person who officially joins or leaves a project team during the life of a project. The assessment did not use the World Bank’s City Strength Diagnostic since this is less reliable. Given the limitations of using data from the project appraisal document (static) or Time Recording System (nonrepresentative), this analysis uses neither of those two data sources.

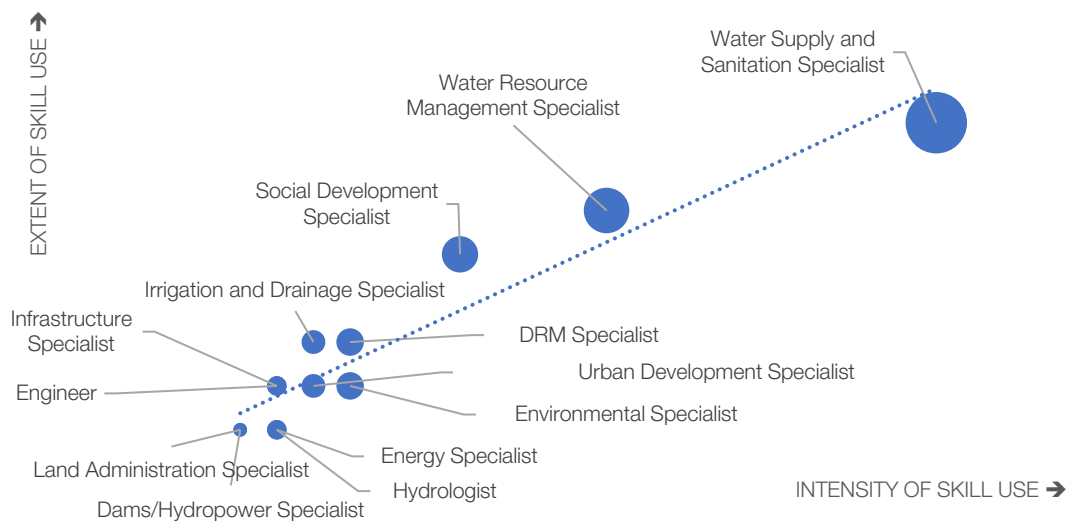
In the figures depicting the results (see illustrative example below), the x-axis is the relative intensity of skill use. The term “skill intensity” refers to how many unique project team members with a specific skill worked on a particular project. This is used as a proxy for the quantity of a skill used per project, which is equivalent to the intensity of the skill used in that project. The y-axis is the relative extent of skill use, that is, the ratio of projects that use a skill relative to all projects in the typology. The size of the circle is the number of times a skill was

used in a typology. The trendline is the average relationship between intensity and extent of skill use in the typology. Skills to the right of this trendline have a lower extent of use compared with their intensity of skill use.

In the analysis, only one occurrence of an individual working as part of the project team was counted, that is, in case a person rejoined the project team or did so in a different capacity (for example, a task team leader becomes a team member), he or she was not counted multiple times. Certain skills that were not of interest (more generic skills used across projects) were excluded from the analysis. These skills and associated project team members were not included in the total project team when the findings were computed.

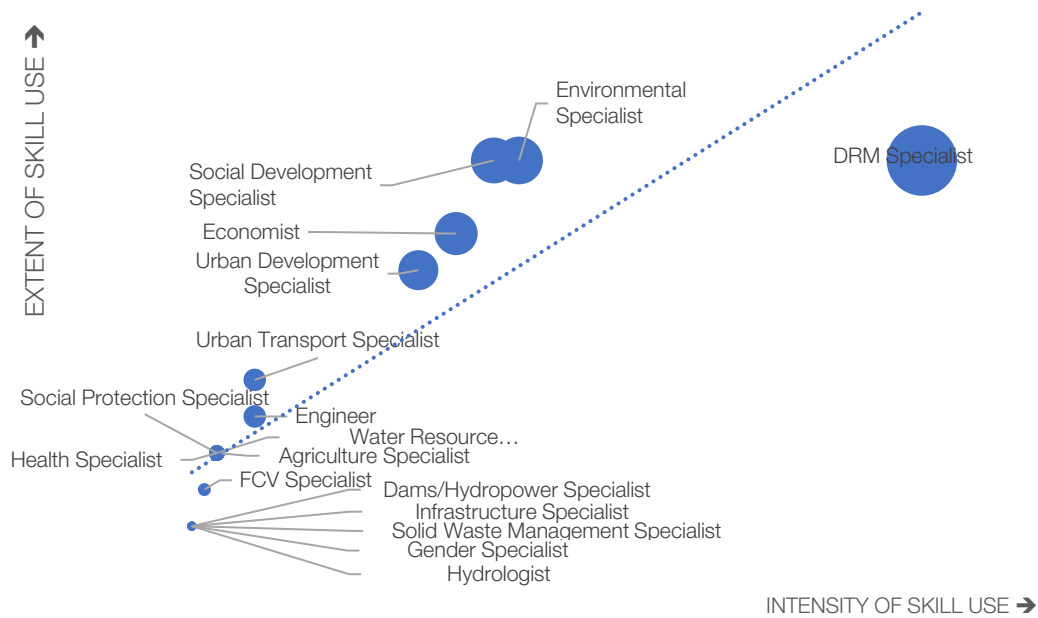
Illustrative Example: Urban Flood and Drought Projects

Figure A.2. Water Global Practice Flood and Drought Projects



Source: Independent Evaluation Group.  
Note: DRM = disaster risk management.

Figure A.3. Social, Urban, Rural, and Resilience Global Practice Flood and Drought Projects



Source: Independent Evaluation Group.  
Note: DRM = disaster risk management; FCV = fragility, conflict, and violence.

Comparison: Water and Social, Urban, Rural, and Resilience Global Practice Flood and Drought Projects

Table A.4. provides a comparison of the skill composition of project team members who worked on the urban flood and drought projects in the Water and Social, Urban, Rural, and Resilience GPs. Social, Urban, Rural, and Resilience projects had more than twice the number of project team members with relevant skills working on each project on average. Furthermore, the skill sets of the Social, Urban, Rural, and Resilience project team members were more diverse than those of Water GP project team members.

**Table A.4. Comparison of Human Resources Analysis: Water and SURR GPs Flood and Drought Projects**

	Water GP	GP SURR
Number of projects (sample size)	8	11
Number of unique project team members with relevant skills	62	187
Average unique project team members with relevant skills per project	8	17
Number of relevant unique skills used	13	18
Most intensely used skill	Water Supply and Sanitation Specialist	DRM Specialist
Skills used in 100% of the projects	Water Supply and Sanitation Specialist	DRM Specialist, Environmental Specialist, Social Development Specialist
Unique skills used (that is, not used by the other GP)	Energy Specialist, Hydrologist, Irrigation and Drainage Specialist, Land Administration Specialist	Agriculture Specialist, Economist, FCV Specialist, Gender Specialist, Health Specialist, Infrastructure Specialist, Social Protection Specialist, Solid Waste Management Specialist, Urban Transport Specialist

Source: Independent Evaluation Group.

Note: DRM = disaster risk management; FCV = fragility, conflict, and violence; GP = Global Practice; SURR = Social, Urban, Rural, and Resilience.

### Resilience-Sensitive Cost-Benefit Analysis

Risk assessments in appraisal documents of 195 projects were reviewed to assess whether urban hazard occurrence is incorporated in a consequential manner into cost-benefit analyses.<sup>1</sup> The sample included: (i) projects from the design analysis (FY15–17) and comparative analysis (FY07–09) portfolios, (ii) projects implemented in the case study cities, and (iii) projects approved in FY18. In selecting projects from the design (FY15–17) and comparative (FY07–09) analysis portfolios, only countries were included that had, as a minimum, one project approved in each period. The analysis explored whether projects at appraisal: (i) identified exposure to urban hazards; (ii) provided information about the project's exposure to the identified urban hazards, in terms of physical considerations; (iii) provided information about the project's exposure to the identified urban hazards, in terms of spatial considerations; and (iv) incorporated urban hazard risks into cost-benefit estimates.

## Part II: System-Level Analysis at the City Level

### City Case Study Selection

To assess the contribution of the Bank Group to resilience building at the city system level, this assessment identified four different organizational approaches, or entry points, to resilience building across cities experiencing diverse types of chronic stresses and acute shocks. Though not mutually exclusive, these approaches present an opportunity to assess early on the diverse ways that the Bank Group is engaging clients to support urban resilience building at the system level. These include the following:

- i. **The City Strength Diagnostic** enables multisectoral collaboration and has been piloted in Can Tho, Accra, Addis Ababa, and several secondary cities in Ethiopia.
- ii. **Sector-led programmatic approaches** triggered by a shock or stressor but that help build a long-term strategic engagement to address the drivers of shock, sometimes over several phases. Case

examples include the World Bank’s support to address chronic congestion and pollution stresses in Bogotá, seismic risk in Istanbul, and flood risk in Manila.

- v. **Sector-led “no-regrets” approaches are just-in-time, technically oriented pragmatic solutions to a shock or chronic stress.** These approaches, though sound, are often pursued because political, fiscal, or capacity constraints preclude a more programmatic approach in the short term. Case examples include flood mitigation in Cap-Haïtien and Jakarta and other disaster relief efforts after a major earthquake in Port-au-Prince.
- vi. **International Finance Corporation (IFC)-led approaches.** Though IFC does not have an institutional resilience aim as such, its Cities Initiative, which seeks to more strategically align upstream dialogue, advisory services, and investments in urban areas, has the potential to contribute to urban resilience. Case study examples include its flagship program in Izmir. Interviews with municipal and IFC stakeholders were also conducted in Cape Town, Durban, and Cartagena.

### System-Level Assessment Methodology

Urban systems exhibit properties and behaviors that are different from its constituent parts. IEG undertook an analysis of the contribution of the World Bank’s portfolio of projects implemented in urban areas (Advisory Services and Analytics, technical assistance, lending, learning exchanges, and so on) for each of the cities selected by the criteria described above. For each city, IEG identified leverage points—key incidents, institutional shifts, and/or individual decisions—within an urban system that affect the way a system or its composite parts behave, and that if changed, can have transformative effects. It then assessed the ways the World Bank’s interventions were enabled or constrained by system interventions: strategies and activities undertaken to transform system behavior by targeting leverage points. Through a thorough review of evaluative evidence, interviews, and site visits, IEG assessed the level at which the World Bank’s contribution was influencing system behavior, across phases. These phases (together, the awareness raising, coping, adapting, and transforming model), which are nonlinear, include (i) awareness raising, (ii) coping, (iii) adapting, and (iv) transforming. These are overlapping phases that systems move through as they create greater resilience, and they can be modeled over time.

An illustrative example of the way that behaviors were modeled at the city level, for the cities that engaged in the City Strength Diagnostic, follows.

**Table A.5. City Strength Diagnostic Pilot in Accra, Addis Ababa, and Can Tho**

	City		
	Accra	Addis Ababa	Can Tho
<b>Behavioral Shifts</b>	Accra’s metropolitan and municipal institutions show proof of learning, with potential for adapting. The institutional system, supported by the World Bank, surpassed sectoral implementation of individual institutions’ mandates and improved institutional coordination. This behavior is linked to the City Strength	CSD helped raise awareness about resilience within multiple ministries and urban local governments through a participatory process, multiple, multihazard assessments done jointly, and a new resilient approach to local urban development. Because of the recent nature of the assessments, it is too soon to link to institutional behaviors	Can Tho is exhibiting cooperative behavior and adopting long-term planning processes between departments (“breaking the silos”) It is transforming its built environment to reduce flood risks through a polder system while using transport to guide growth to elevated areas and enhancing urban core.



	City		
	Accra	Addis Ababa	Can Tho
<b>Enablers/Constraints</b>	<p>Diagnostic (CSD) process. In the World Bank, CSD leads to multisectoral projects – GARID (it is too soon to know if these are successful).</p> <p>Infrastructure changes in the built environment only show evidence of limited coping, owing to World Bank (and other donors) -supported remedial actions after floods. No indication of comprehensive behavioral change when it comes to flood-proofing vulnerable structures. Unrealized resilience gains envisioned by a Multilateral Investment Agency (MIGA) guarantee of a desalinization plant (constraints relate to technology and financial arrangements). Land is the most difficult issue. Increasing jurisdictional fragmentation reduces effectiveness of collaborative efforts.</p>	<p>likely to lead to system-level change.</p> <p>Sustained engagement at the local government level to build the administrative capacity that underpins resilience. There is a shift toward an expanded approach on social risks—job creation—beyond public works including on urban upgrading. As a program, it now measures its success by scoring itself against metrics associated with livability, sustainability, and management, as well as “urban resilience” and inclusion (gender) targets.</p> <p>In <i>Addis Ababa</i>, strong shift (political will) in key sector (transport) from expanding coverage to leading sector model to improve livability (congestion, drainage, and safety).</p> <p>Integration of social safety net and the urban resilience agenda (disaster risk management).</p>	<p>The World Bank’s approach has evolved, with a shift observed after CSD, as evidenced by a new resilience project that facilitates interdepartment cooperation, open data, and a programmatic approach. Moved from neighborhood approach to systems-level approach at city level.</p> <p>Link to social safety net/disaster risk management.</p> <p>Potential constraints are innovative aspects are relegated to the Mid-Term Review; complex technology and capacity to maintain systems.</p>
<b>ACAT</b>	<p>Increased awareness of resilience at all levels. Just coping in the built environment (no evidence that infrastructure is flood resilient).</p> <p>Adaptive behavior, beyond sector, cross-institutional mandates.</p>	<p>Increased awareness about risk-sensitive urban development, World Bank–supported efforts in <i>Addis Ababa</i> are helping city to cope with risks. In the urban local governments, there is potential to shape a more adaptive environment by consolidating existing urban extent through works.</p>	<p>Adapting at both institutional level and within the built environment with potential for transformation.</p>

Source: Independent Evaluation Group.

Note: ACAT = awareness raising, coping, adapting, and transforming; GARID = Greater Accra Clean Resilient and Inclusive Development.

### Part III: Limitations

Urban resilience also takes time to materialize. On complex issues such as urban resilience, causal contribution (from the Bank Group to changes in the urban system) evidently becomes much more challenging. The case-based information offers insights on how different approaches have contributed to incremental changes within an urban system, using the awareness raising, coping, adapting, and transforming model, but attribution is difficult. There are limitations in generalizability, especially regarding the case-based approach. Though the

Appendix A  
Methodology

analysis of the City Strength Diagnostic approach covered the population of pilot cities, the other entry points should not be considered representative, but illustrative of different approaches identified.

## Reference

World Bank. 2013. *Inclusion Matters: The Foundation for Shared Prosperity*. Washington, DC: World Bank.  
<https://openknowledge.worldbank.org/bitstream/handle/10986/16195/9781464800108.pdf?sequence=1&isAllowed=y>.

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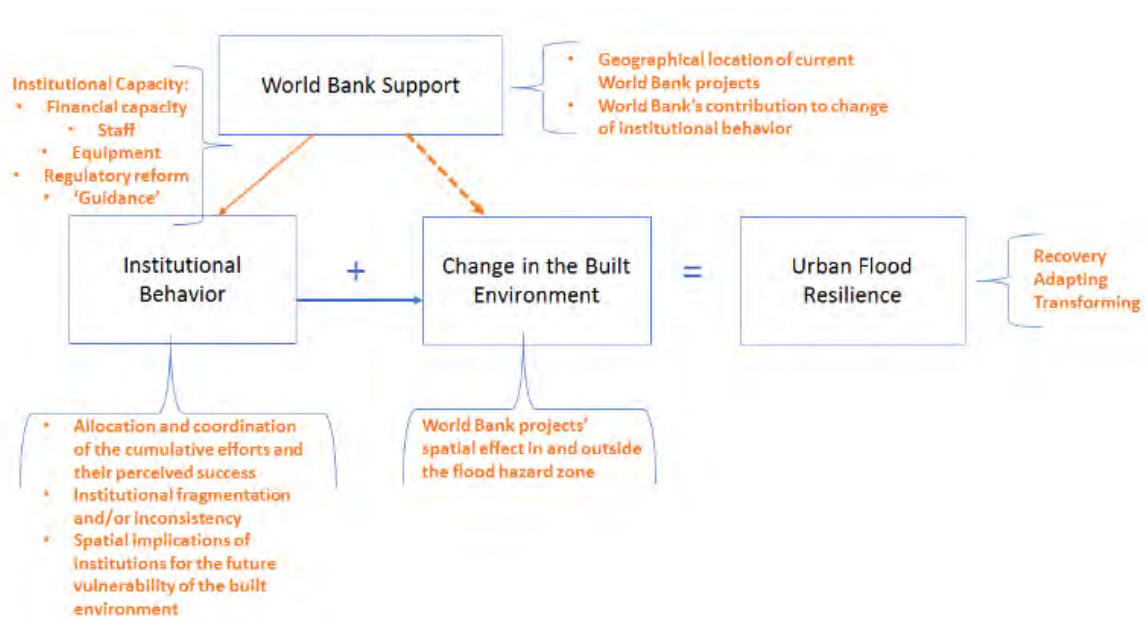
<sup>1</sup> Separate risk assessment sections (Key Risks, Critical Risks, Risk Assessment, Integrated Risk Assessment, Key Risk Annexes) if present; Operational Risk Assessment Frameworks if present; and Economic/Economic and Financial Analysis if present.

## Appendix B. A Systems Perspective on Urban Flood Resilience in Ghana

**Overview.** The evaluation undertook one in depth study on flood resilience and the role of the World Bank in the Accra Metropolitan Area (AMA). Although the AMA only constitutes one of the 23 Municipal Assemblies that fall within the Greater Accra Metropolitan Area, it contains the majority of floodable areas in the region and represents the greatest urgency in terms of urban flood resilience. The selection of institutional actors for this analysis (and data collection via semistructured interviews) was done by following a multilevel approach and according to the thematic and/or sectoral focus of their mandates. The chosen institutional actors implement and/or set the regulatory and/or policy frameworks for the sectors that address flood management, land use and construction management, sanitation, solid and liquid waste collection and processing and emergency management at the national, regional and local levels.

**Systems Level Analysis.** The study developed and used a framework for evaluation in the context of systems thinking, which provides an integrated overview about how institutions contribute to improving flood resilience (see figure B.1). The study should be considered as a first, explorative exercise to combine insights from a geographical and institutional analysis, to develop an integrated perspective on urban flood resilience, related to the operation of an international donor. Although preliminary in nature, the study identifies the challenges surrounding geographically widespread flood vulnerabilities and complex institutional contexts at the ministerial, intersectoral and city levels involved in resilience efforts. Although it is difficult to establish the perceived and actual influence of the World Bank's interventions on urban resilience, the case study illustration shows how its contribution toward institutional capacity strengthening, coordination, and collaboration in flood management is locally recognized.

**Figure B.1. The Relationship between World Bank Support and Urban Flood Resilience, Operationalized for Data Collection and Analysis**



**Levels of urban resilience building.** The framework also includes a way of assessing flood resilience across three levels of urban system outcomes in the context of urban resilience. The first level involves the increased ability of the system to identify, *cope* with and recover from shocks and threats while maintaining essential functions. The second level involves the gained ability of systems to *adapt* to anticipated shocks, threats and changing conditions. The third level of system outcome refers to the system’s exhibition of *transformative* behavior, in which resilience is well integrated into institutional decision-making and local actions. All three involve some type of institutional behavior as well as change in the built environment (see table B.1).

**Table B.1. Assessment of Flood Resilience of Urban System**

	<b>Learning by institutions</b>	<b>Change in the built environment</b>
<b><i>Coping</i></b>	Institutions remain focused on sectorally implementing mandates, no improved coordination on long-term resilience efforts	Mere recovery of what has been lost; not ‘building back better’
<b><i>Adapting</i></b>	Institutions demonstrate some proof of learning; i.e. adapting and streamlining policies, coordination	Limited change in the built environment, i.e. installing equipment for early warning
<b><i>Transforming</i></b>	Institutions demonstrate strong proof of learning based on their experiences and new information, modifying standards or norms based on emerging evidence rather the status quo	Considerable change in the built environment that reduces vulnerability to flooding, i.e. resettlement, improved infrastructures, flood proofing vulnerable constructions

**Results.** On the basis of interviews and secondary data, AMA is classified in terms of flood resilience as adapting, rather than coping or transforming; the institutions from key sectors show some proof of learning in terms of changing and streamlining their efforts, combined with limited change in the built environment.

The fact that the overall effort can be characterized as going beyond mere ‘coping’ is justified by the fact that the institutional system shows signs of surpassing the sectoral implementation of individual institutions’ mandates, and that improved coordination of long-term efforts to build flood resilience takes place to some extent and features prominently on the agenda of the various institutions involved. For example, the creation of the statutory planning committee(s) at the Municipal, Metropolitan and District Assemblies level and the Technical Working Group on Water and Sanitation give evidence of the intent of improved coordination. The upcoming Integrated Urban Sanitation Plan, and perhaps even the creation of the site-specific Ministry of Inner Cities and Zongo-development can be seen as possible steps to sectoral integration and long-term streamlining of efforts. Many respondents pointed to the City Strength Diagnostic, a World Bank supported initiative, as the source of this acquired knowledge.

In terms of change in the built environment, characterizing the overall effort as ‘adapting’ is justified in large part by the remedial actions after the 2015 flood disaster, most notably dredging of the Odaw, the realignment and widening of drains near Kaneshie Circle and Mallam Junction (with support from the World Bank), and the installment of equipment for early warning systems by the National Disaster Management Organization and its international development partners. However, the persistence of informal settlements remains a major challenge in the area.

It would go too far to use the term ‘transforming’ to characterize flood resilience in the AMA. At this point, there is a lack of evidence on effectiveness of the learning behavior of the involved institutions. Despite the potential for streamlining efforts, none of the respondents provided any examples of successful streamlining efforts by the statutory planning committee. The Technical Working Group on Sanitation was mentioned as successful by several respondents, mainly because of its ability to “give corrective advice” to its members.

As to changes in AMA’s built environment, it clearly does not merit the classification ‘transforming’: there is no indication of flood-proofing vulnerable structures, and no success so far in resettling vulnerable communities from hazardous areas. Improving infrastructures from a resilience perspective (that is, roads, but most notably the alignment and capacity of drains) has been mentioned, but we lack information about the scope and success of these efforts.

Through its projects, the World Bank has been supporting the coordination and integration among sectors over time. Through various projects, the World Bank appears to have had a substantial impact on the institutional framework surrounding urban flood resilience via the drafting of the Land Use and Spatial Planning Act (that is, as a result of the Land Administration Projects) and the creation of institutions within the transport, sanitation and land management sectors (that is, resulting from the transport projects, the Greater Accra Metropolitan Area and Land Administration Projects). Some of the institutions and statutory changes created directly or indirectly with World Bank support have strong potential to contribute to long-term streamlining of flood resilience efforts. The statutory planning committee and the Technical Working Group on Sanitation are key examples of this.

The World Bank has also contributed to a shared understanding of the integrated nature of flood resilience among key institutions, and the efforts required to deal with it, most notably via the City Strength Diagnostic, the Greater Accra Flood Risk Mitigation Strategy and the preparations for the Greater Accra Clean Resilient and Inclusive Development project. In the field, remedial actions at the direction of the World Bank after the 2015 flood disaster, have resulted in improved drainage infrastructure in the built environment.

When assessing the World Bank’s actions against known efforts of other international development partners, it appears that efforts of United Nations Development Programme and the Global Facility for Disaster Reduction and Recovery (a World Bank supported initiative) focus on the third track of flood safety (emergency response) complement World Bank’s focus on the second and first tracks (preventive engineering and adaptation in the built environment). When disaster hits, the World Bank is part of a large movement toward greater collaboration and streamlining with other donors. In its efforts to strengthen land administration and spatial planning—perhaps the most wicked challenge undermining flood resilience in Greater Accra—World Bank support appears to be quite unique.

## Appendix C. List of Persons Consulted

Name	Title	Organization
World Bank Group active and retired staff and consultants – Washington, DC		
Ede Jorge Ijjasz-Vasquez	Senior Director, GSURR	World Bank
Guangzhe Chen	Senior Director, Transport	World Bank
Jennifer J. Sara	Senior Director, Water	World Bank
Sameh Naguib Wahba Tadros	Director, GSURR	World Bank
Ayat Soliman	Director, Water Department	World Bank
Maria Angelica Sotomayor	Practice Manager, Water Department	World Bank
Sebastian Stolorz	Senior Operations Officer, OPCS	World Bank
Marc S. Forni	Lead Disaster Risk Management Specialist	World Bank
Rumana Huque	Senior Operations Officer, OPCS	World Bank
Stephen Francis Pirozzi	Senior Operations Officer, OPCS	World Bank
Jana El-Horr	Senior Social Development Specialist, SURR	World Bank
Margaret Arnold	Senior Social Development Specialist, SURR	World Bank
Catherine Lynch	Senior Urban Specialist	World Bank
Lauri Sivonen	Senior Social Development Specialist	World Bank
Marc Forni	Lead Disaster Risk Management Specialist	World Bank
Carina Lakovits	Consultant	World Bank
Yogita Mumssen	Senior Infrastructure Economist	World Bank
Josef Leitmann	Lead Disaster Risk Management Specialist	World Bank
Maria Cordeiro	Senior Transport Specialist	World Bank
Georges Darido	Lead Urban Transport Specialist	World Bank
Arturo Ardila Gomez	Lead Transport Economist	World Bank
Maria Angelica Sotomayor Araujo	Practice Manager	World Bank
Gerhardus Nicolaas Albertus Soppe	Senior Water Supply and Sanitation Specialist	World Bank
Lizmara Kirchner	Senior Water Supply and Sanitation Specialist	World Bank
Nishtha Mehta	Water Supply and Sanitation Specialist	World Bank
Clementine Marie Stip	Operations Analyst	World Bank
Amal Talbi	Senior Water Supply and Sanitation Specialist	World Bank
Angelica Nunez del Campo	Senior Operations Officer	World Bank
Emanuela Monteiro	Senior Urban Development Specialist	World Bank
Silpa Kaza	Urban Development Specialist	World Bank

<b>Name</b>	<b>Title</b>	<b>Organization</b>
Abhas Kumar Jha	Practice Manager	World Bank
Saurabh Suresh Dani	Senior Disaster Risk Management Specialist	World Bank
Sylvie Debomy	Lead Urban Development Specialist	World Bank
Ali Alwahti	Consultant, former Senior Urban Development Specialist	World Bank
Jonas Ingemann Parby	Senior Urban Specialist	World Bank
Claudia Soto	Disaster Risk Management Specialist	World Bank
Michel Matera	Senior Urban Specialist	World Bank
International Finance Corporation staff – Washington, DC		
Lisa Da Silva	Principal Investment Officer	IFC
Giridhar N. Srinivasan	Senior Operations Officer	IFC
Pavel Kochanov	Senior Municipal Finance Specialist	IFC
David Bot Ba Njock	Investment Officer	IFC
Jason Lee	Investment Officer	IFC
Nicola Ruggero Saporiti	Senior Investment Officer	IFC
Ana Margarita Trujillo	Investment Officer, Infrastructure and Natural Resources	IFC
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George Butler	Principal Water and Sanitation Specialist	IFC
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Edmond Mjekiqi	Operations Officer	IFC
International Finance Corporation staff – Country Offices		
Patrick Alexander Avato	Senior Operations Officer	IFC (Serbia)
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Nicola R. Saporiti	Senior Investment Officer	IFC (Serbia)
Adèle Paris	Investment Officer	IFC (Serbia)
Ignace Rusenga Mihigo Bacyaha	Resident Representative	IFC (Rwanda and Burundi)
Julie M. Bayking	Investment Officer, Infrastructure Advisory, East Asia Pacific	IFC (Philippines)
Jessica Farmer	Infrastructure Lead for Myanmar and InfraVentures Asia Lead	IFC (Myanmar)
Alejandra Gutierrez de Pineres	Associate Investment Officer	IFC (Colombia)
Maria Victoria Guarín	Senior Investment Officer	IFC (Colombia)

Appendix C  
List of Persons Consulted

<b>Name</b>	<b>Title</b>	<b>Organization</b>
Kristtian Rada	Senior Operations Officer	IFC (Colombia)
Paola Maria Castillo Matute	Environmental and Social Development Specialist	IFC (Brazil)
Multilateral Development Banks and Regional Development Banks		
Sonia Chand Sandhu	Senior Advisor to Vice President for Knowledge Management, Sustainable Development, Climate Change	Asian Development Bank
NGOs, civil society organizations, foundations, research institutes, academia		
Lorenzo Bernasconi	Senior Associate Director	The Rockefeller Foundation (NYC)
Ahmed Abu-Laban	Ramallah City Director since 2006. Starting 2018, Executive CRO to lead implementation of Ramallah's first ever Resilience Strategy	The Rockefeller Foundation
Dr. Mohammed Shaheen	Chief Resilience Officer	Ramallah City

**Peer Reviewers**

Michael Bamberger	International Evaluation Expert	
Daniel Hoorweg	Former Lead Urban Specialist	World Bank
George Matovu	Former Director	Municipal Development Program for Eastern and Southern Africa
Uma Udusumilli	Head, Regional Planning Division	Mumbai Metropolitan Region Development Authority

**Related to Project Performance Assessment Report on Brazil**

World Bank Group active and retired staff and consultants		
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Sameh Wahba	Director	World Bank
Ming Zhang	Practice Manager	World Bank
Government		
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Deusdete Fagundes de Brito	Housing Sector Coordinator	CONDER
Regina Luz	Project Coordinator	CONDER
Adriana Luz	Housing Coordinator	CONDER
Tanisia Vieira	Housing Sector Coordinator	CONDER



Ana Paula Santana	land titling sector	CONDER
Gabriel Nunes	Housing Sector Director	SEDUR
Adalva Tonhã	land titling sector	SEDUR
NGOs, civil society organizations, foundations, research institutes, academia		
Andre Santana	Technical Adviser	Casa Civil
Ângela Gordilho	Professor	Faculty of Architecture and Urbanism, Federal University of Bahia
Ana Carolina Valverde	Professor	
Sérgio Bulcão	Social Operator	União Moradia Popular
Raimilton Luy	Social Operator	Movimento de Cultura Popular do Subúrbio (MCPS)
Lurdinha Paez	Director	Local community-based organizations Rede Campi and ABDAE
Multilateral, regional, and bilateral development partners		
Fabrizio Pellicelli	Regional Manager	The Italian Development Cooperation, and Association of Volunteers for International Service, AVSI
<b>Related to case Study on COLOMBIA</b>		
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Mauricio Cuellar	Lead Urban Transport Specialist	World Bank
Vanesa Velasco	Urban Development Specialist	World Bank
Camila Rodriguez	Urban Development Specialist	World Bank
Karen Navarro	Water Resource Management Specialist	World Bank
Lorena Trejos	Consultant	World Bank
Kristiaan Rada	Latin America and the Caribbean Sustainable Cities Platform Coordinator	IFC
Maria Victoria Guarin	Investment Officer, responsible for urban projects in Bogotá and Cartagena	IFC
Paola Castillo	Environmental and Social Specialist	IFC
Alejandra Gutierrez de Pineres	Associate Investment Officer	IFC

Appendix C  
List of Persons Consulted

Government		
Fernando Guzman	Represents all Colombian departmental capital cities in Bogotá	Association of Colombian Capitals
Santiago Uribe	Chief Resilience Officer	Mayor's Office, Medellín
Carolina Maria Bernal Sierra	Deputy Director of Knowledge Management	Cooperation and Investment Agency (ACI)
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Appendix C  
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Appendix C  
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Appendix C  
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Appendix C  
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Appendix C  
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Appendix C  
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Appendix C  
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Appendix C  
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Appendix C  
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Appendix C  
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Appendix C  
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## Appendix D. Portfolio Review Project List

Table D.1. Design Analysis, FY15–17

PID	Project Name	Country	FY Approved	GP	Typology
P127338	BZ climate-Resilient Infrastructure	Belize	2015	SURR	Flood and drought
P146059	MZ Cities and Climate Change PPCR AF	Mozambique	2015	SURR	Flood and drought
P146464	Multipurpose Disaster Shelter Project	Bangladesh	2015	SURR	Flood and drought
P148125	DCRMP Additional Financing	Moldova	2015	SURR	Flood and drought
P148259	Strengthening Hydro-Meteorological Services Project	Haiti	2015	SURR	Flood and drought
P149259	GD RDVRP AF	Grenada	2015	SURR	Flood and drought
P152150	Additional Financing—Senegal SMCCA	Senegal	2015	SURR	Flood and drought
P154036	Disaster Resilience Improvement Project	Pakistan	2015	SURR	Flood and drought
P154990	Jhelum and Tawi Flood Recovery Project	India	2015	SURR	Flood and drought
P144539	Integrated Disaster Risk Management and Resilience P-for-R	Morocco	2016	SURR	Flood and drought
P146965	Disaster Vulnerability Reduction Project	Jamaica	2016	SURR	Flood and drought
P150220	Bangladesh Weather and Climate Services Regional Project	Bangladesh	2016	SURR	Flood and drought
P152851	<i>Can Tho</i> Urban Development and Resilience	Vietnam	2016	SURR	Flood and drought
P155350	Sindh Resilience Project (SRP)	Pakistan	2016	SURR	Flood and drought
P149485	China Ningbo Sustainable Urbanization Project	China	2017	SURR	Flood and drought
P155201	Municipal urban Management and Resilience Project	Haiti	2017	SURR	Flood and drought
P155324	Saint Lucia DVRP AF	St. Lucia	2017	SURR	Flood and drought
P160931	Myanmar SEA DRM project	Myanmar	2017	SURR	Flood and drought
P161392	Malawi Drought Recover and Resilience Project	Malawi	2017	SURR	Flood and drought

P163199	AF HT DRM and Reconstruction	Haiti	2017	SURR	Flood and drought
P163830	Somalia Emergency Drought Response	Somalia	2017	SURR	Flood and drought
P144966	KE Informal Settlements Impvt Proj AF	Kenya	2015	SURR	Housing
P155969	Nepal: Earthquake Housing Reconstruction Project	Nepal	2015	SURR	Housing
P130710	Bangladesh: Pro-poor Slums integration project	Bangladesh	2016	SURR	Housing
P146933	Congo: Urban Development and poor neighborhood upgrading	Congo, Rep.	2016	SURR	Housing
P154782	Indonesia: National Slum Upgrading Project	Indonesia	2017	SURR	Housing
P154948	Indonesia: National Affordable Housing Program Project	Indonesia	2017	SURR	Housing
P157932	Mexico: Improving access to affordable housing project	Mexico	2017	SURR	Housing
P159843	Argentina: Metropolitan Buenos Aires Urban Transformation	Argentina	2017	SURR	Housing
P159929	Argentina: Integrated Habitat and Housing Project	Argentina	2017	SURR	Housing
P123134	Tanzania Dar es Salam Metropolitan Development Project	Tanzania	2015	SURR	Urban transport
P127338	BZ climate-Resilient Infrastructure	Belize	2015	SURR	Urban transport
P133456	China Sichuan Chongqing Cooperation Guang'an Demonstration Area Infrastructure Development Project	China	2015	SURR	Urban transport
P144966	KE Informal Settlements Impvt Proj AF	Kenya	2015	SURR	Urban transport
P148366	RY: AF-Labor Intensive Public Works	Yemen, Rep.	2015	SURR	Urban transport
P149259	GD RDVRP AF	Grenada	2015	SURR	Urban transport
P152523	GZ Emergency Response AF MDP-2	West Bank and Gaza	2015	SURR	Urban transport
P150844	Rwanda Urban Development Project	Rwanda	2016	SURR	Urban transport
P151832	Burkina Faso Transport and Urban Infrastructure Development	Burkina Faso	2016	SURR	Urban transport
P152623	North East Local Services Improvement Pr	Sri Lanka	2016	SURR	Urban transport
P152709	AF(CRW) for SB-Rapid Employment Project	Solomon Islands	2016	SURR	Urban transport

P156505	Vanuatu Reconstruction project	Vanuatu	2016	SURR	Urban transport
P157427	SCDP—Additional Financing	Sri Lanka	2016	SURR	Urban transport
P149485	China Ningbo Sustainable Urbanization Project	China	2017	SURR	Urban transport
P161980	Pakistan Karachi Neighborhood Project	Pakistan	2017	SURR	Urban transport
P133000	Huainan Mining Area Rehabilitation Project	China	2015	SURR	Urban Upgrading
P133069	Shaanxi Small Towns Infrastructure Project	China	2015	SURR	Urban Upgrading
P146966	Emergency Monrovia Urban Sanitation 2AF	Liberia	2015	SURR	Urban Upgrading
P147456	CG-Add. Fin. Water, Elect and Urban Dev.	Congo, Rep.	2015	SURR	Urban Upgrading
P147521	Regional and Municipal Infrastructure Development II	Georgia	2015	SURR	Urban Upgrading
P149493	Bangladesh Urban Resilience Project	Bangladesh	2015	SURR	Urban Upgrading
P150395	India: Tamil Nadu Sustainable Urban Development Program	India	2015	SURR	Urban Upgrading
P150374	Somalia: Somali Urban Investment Planning	Somalia	2016	SURR	Urban Upgrading
P151077	Gabon: Infrastructure and Local Development Project II	Gabon	2016	SURR	Urban Upgrading
P151416	Urban Development Project	Kyrgyz Republic	2016	SURR	Urban Upgrading
P155732	Emergency Operation for Development	Iraq	2016	SURR	Urban Upgrading
P157427	SCDP—Additional Financing	Sri Lanka	2016	SURR	Urban Upgrading
P128605	Turkey Sustainable Cities Project	Turkey	2017	SURR	Urban Upgrading
P147147	Urban Development Support Project	Afghanistan	2017	SURR	Urban Upgrading
P154947	Regional Infrastructure Development Fund	Indonesia	2017	SURR	Urban Upgrading
P157114	DRC—Urban Development Project AF	Congo, Dem. Rep.	2017	SURR	Urban Upgrading
P159049	Additional Financing for Danang SCDP	Vietnam	2017	SURR	Urban Upgrading
P159426	AF for Medium Cities Development Project	Vietnam	2017	SURR	Urban Upgrading

P159489	Tanzania Strategic Cities AF II-SUF	Tanzania	2017	SURR	Urban Upgrading
P132982	RRMSP	Albania	2015	Transport	Roads and highways
P148850	Expressway Development Support Project	Ethiopia	2015	Transport	Roads and highways
P150929	BI-Infrastructure Resilience Emergency	Burundi	2015	Transport	Roads and highways
P132833	Transport Connectivity and Asset Management Project	Sri Lanka	2016	Transport	Roads and highways
P149953	Secondary Road Asset Management Project	Georgia	2016	Transport	Roads and highways
P153078	SN-Transport and Urban Mobility Addt'l Fin	Senegal	2016	Transport	Roads and highways
P156377	Azerbaijan Highway 3 AF	Azerbaijan	2016	Transport	Roads and highways
P157923	Local connectivity emergency project	Central African Republic	2016	Transport	Roads and highways
P151026	Transport Sector Improvement Project	Ghana	2017	Transport	Roads and highways
P158413	Corridor X Highway AF	Serbia	2017	Transport	Roads and highways
P161248	1st AF to the Cabo Verde TSRP (P126516)	Cabo Verde	2017	Transport	Roads and highways
P161939	Additional Financing to LIBRAMP	Liberia	2017	Transport	Roads and highways
P162110	Uruguay Road P-for-R AF	Uruguay	2017	Transport	Roads and highways
P150937	Dar Es Salaam Urban Transport Improvement Project	Tanzania	2017	Transport	Urban transport
P119343	PH Cebu Bus Rapid Transit (BRT)	Philippines	2015	Transport	Urban transport
P126507	Ho Chi Minh City Green Transport Development Project	Vietnam	2015	Transport	Urban transport
P128919	Zhengzhou Urban Rail Project	China	2015	Transport	Urban transport
P132418	Efficient and Sustainable City Bus Service	India	2015	Transport	Urban transport
P132775	Gansu Rural-Urban Integration	China	2015	Transport	Urban transport
P149444	GH-Transport Sector Project AF (FY14)	Ghana	2015	Transport	Urban transport
P153085	DRC-Goma Airport Project	Congo, Dem. Rep.	2015	Transport	Urban transport

P132562	CN-Hubei Xiaogan Logistics	China	2016	Transport	Urban transport
P145610	PE—Lima Metro Line 2 Project	Peru	2016	Transport	Urban transport
P147280	Urban Transport	Ecuador	2016	Transport	Urban transport
P148129	Tianjin Urban Transport Improvement Proj	China	2016	Transport	Urban transport
P148294	Wuhan Integrated Transport Development Project	China	2016	Transport	Urban transport
P148527	Urumqi Urban Transport Project II	China	2016	Transport	Urban transport
P149653	MA: Urban Transport (P4R)	Morocco	2016	Transport	Urban transport
P151819	Urban Transport	Ethiopia	2016	Transport	Urban transport
P132401	Metro <i>Manila</i> Bus Rapid Transit Line 1	Philippines	2017	Transport	Urban transport
P150496	Dar es Salaam Maritime Gateway Project	Tanzania	2017	Transport	Urban transport
P153173	Anhui Road Maintenance Innovation	China	2017	Transport	Urban transport
P156186	Dakar BRT Pilot Project	Senegal	2017	Transport	Urban transport
P156253	Infrastructure Renewal and Urban Mgt AF	Côte d'Ivoire	2017	Transport	Urban transport
P160359	Rural and Urban Access Improvement Project	Nicaragua	2017	Transport	Urban transport
P161393	Metropolitan Areas Urban Transport	Argentina	2017	Transport	Urban transport
P133117	Chongqing Small Towns Water Env. Mgmt.	China	2015	Water	Flood and drought
P152018	Floods Emergency Recovery Project	Serbia	2015	Water	Flood and drought
P145686	AR Buenos Aires Flood risk management	Argentina	2016	Water	Flood and drought
P147460	ODRA-VISTULA FLOOD MANAGEMENT PROJECT	Poland	2016	Water	Flood and drought
P152460	Vinh Phuc Flood Risk	Vietnam	2016	Water	Flood and drought
P160911	Emergency Water Security and Efficiency	Botswana	2017	Water	Flood and drought
P161798	Salado IRBM Support Project	Argentina	2017	Water	Flood and drought

P117449	Hebron Regional Wastewater Management-1	West Bank and Gaza	2015	Water	Water supply and sanitation
P125184	LB-Water Supply Augmentation Project	Lebanon	2015	Water	Water supply and sanitation
P127978	Second Ho Chi Minh City ES Project	Vietnam	2015	Water	Water supply and sanitation
P132979	Kenya Water and Sanitation OBA Fund	Kenya	2015	Water	Water supply and sanitation
P133017	Guilin Integrated Environment Management	China	2015	Water	Water supply and sanitation
P133116	Qinghai Xining Water Environment Mgmt.	China	2015	Water	Water supply and sanitation
P133287	PE AF 2nd Optimization of Water and Sewerage	Peru	2015	Water	Water supply and sanitation
P145559	KE—Cstl Rgn Water Security and Clim. Res	Kenya	2015	Water	Water supply and sanitation
P147378	NAT'L WATER SUPPLY and SAN II—AF	Azerbaijan	2015	Water	Water supply and sanitation
P147827	LK Water and Sanitation Improvement Proj	Sri Lanka	2015	Water	Water supply and sanitation
P149091	ZM-Lusaka Sanitation Project	Zambia	2015	Water	Water supply and sanitation
P149556	Urban Water Sector Project—AF	Burkina Faso	2015	Water	Water supply and sanitation
P150351	FY16-SN Urban Water and Sanitation Proje	Senegal	2015	Water	Water supply and sanitation
P151032	GZ Emergency Water Supply and Sewage Sys AF	West Bank and Gaza	2015	Water	Water supply and sanitation
P151439	EC Guayaquil Wastewater Management Proje	Ecuador	2015	Water	Water supply and sanitation
P152801	AF Bukhara and Samarkand Sewerage	Uzbekistan	2015	Water	Water supply and sanitation
P154729	DWSP2 Additional Financing	Tajikistan	2015	Water	Water supply and sanitation
P130544	IN: Karn Urb Wtr Modernization	India	2016	Water	Water supply and sanitation
P149377	Water Service and Institutional Support II	Mozambique	2016	Water	Water supply and sanitation
P155266	DRC Urban Water Supply Project AF	Congo, Dem. Rep.	2016	Water	Water supply and sanitation
P155947	Urban Water Supply	Liberia	2016	Water	Water supply and sanitation
P156678	Urban Water Supply and Wastewater AF	Vietnam	2016	Water	Water supply and sanitation

P157438	Urban Water Supply Project-AF	Mali	2016	Water	Water supply and sanitation
P159240	URB WAT and SAN—AF	Niger	2016	Water	Water supply and sanitation
P150361	Second-TZ-Water Sector Suport Project	Tanzania	2017	Water	Water supply and sanitation
P151224	AO:Water Sector Institutional Dev.2	Angola	2017	Water	Water supply and sanitation
P154275	Burunga—Waste water Mgmt Project	Panama	2017	Water	Water supply and sanitation
P154713	TN-Northern Tunis Wastewater AF	Tunisia	2017	Water	Water supply and sanitation
P155087	Water Supply and Sanitation Development	Papua New Guinea	2017	Water	Water supply and sanitation
P156143	Coastal Cities Sustainable Environment P	Vietnam	2017	Water	Water supply and sanitation
P156239	CO PAZcifico: WSBS Infrastructure Proj	Colombia	2017	Water	Water supply and sanitation
P156433	Second Ethiopia—Urban WSSP	Ethiopia	2017	Water	Water supply and sanitation
P156634	WSDP	Kenya	2017	Water	Water supply and sanitation
P156738	Benin Water and Urban Septage Management	Benin	2017	Water	Water supply and sanitation
P156739	Côte d'Ivoire Urban Water Supply Project	Côte d'Ivoire	2017	Water	Water supply and sanitation
P157782	Guinea Urban Water Project	Guinea	2017	Water	Water supply and sanitation
P161566	Additional Financing to CWSISP	Bangladesh	2017	Water	Water supply and sanitation
P161630	AF—PUASEE	Guinea-Bissau	2017	Water	Water supply and sanitation
P162712	Plan Belgrano Water AF	Argentina	2017	Water	Water supply and sanitation

**Table D.2. Comparative Analysis FY07–09**

<b>PID</b>	<b>Project Name</b>	<b>Country</b>	<b>FY Approved</b>	<b>GP</b>	<b>Typology</b>
P071340	Nigeria Lagos Metropolitan Dev and Governance	Nigeria	2007	SURR	Flood and drought
P103518	Africa Flood Prepared. and Early Warning (FY07)	Africa	2007	SURR	Flood and drought
P096925	China Bengbu Integrated Environment Improv	China	2008	SURR	Flood and drought
P103539	Guyana-GEF Conservancy Adaptation Project	Guyana	2008	SURR	Flood and drought
P110845	Albania Disaster Risk Mitigation	Albania	2008	SURR	Flood and drought
P100390	LK: Puttalam Housing Project	Sri Lanka	2007	SURR	Housing
P104357	Yogyakarta and Central Java Earthquake Roof Structure Project	Indonesia	2007	SURR	Housing
P079032	Housing and Communal Services	Russian Federation	2008	SURR	Housing
P101342	Third Affordable Housing and Urban Poverty Reduction Development Policy Loan (HUDPL III)	Mexico	2008	SURR	Housing
P104994	Bishkek and Osh Urban Infrastructure Project	Kyrgyz Republic	2008	SURR	Housing
P110126	Regional and Municipal Infrastructure Development Project	Georgia	2009	SURR	Housing
P096332	MZ-Maputo Municipal Development Program	Mozambique	2007	SURR	Urban Transport
P083322	CN-SICHUAN URBAN Development Project	China	2007	SURR	Urban transport
P083322	CN-SICHUAN URBAN Development Project	China	2007	SURR	Urban upgrading
P071340	NG-Lagos Metropolitan Development and Governance Project	Nigeria	2007	SURR	Urban upgrading
P083979	Bolivia: Urban Infrastructure Project	Bolivia	2007	SURR	Urban upgrading
P084022	SN-Local Authorities Development Program	Senegal	2007	SURR	Urban upgrading
P100026	MA-National Initiative for Human Dev.	Morocco	2007	SURR	Urban upgrading
P104497	DRC Em. Urban and Social Rehab ERL (FY07)	Congo, Dem. Rep.	2007	SURR	Urban upgrading
P078382	UG-Kampala Inst and Infrast Dev Prj (FY08)	Uganda	2008	SURR	Urban upgrading



P086508	VN-Priority Infra Investment	Vietnam	2008	SURR	Urban upgrading
P088876	DJ-Urban Poverty Reduction Project	Djibouti	2008	SURR	Urban upgrading
P089013	BR Municipal Lending Program: Recife	Brazil	2008	SURR	Urban upgrading
P094199	Rio Grande Do Sul Integrated Municipal Development Program	Brazil	2008	SURR	Urban upgrading
P094229	EG-Alexandria Development	Egypt, Arab Rep.	2008	SURR	Urban upgrading
P095949	NE-Loc Urb Infrastructure Dev SIL (FY08)	Niger	2008	SURR	Urban upgrading
P106699	Haiti Community-Driven Development Project (PRODEPUR)	Haiti	2008	SURR	Urban upgrading
P099369	BR Ceara Regional Development	Brazil	2009	SURR	Urban upgrading
P112998	BI-Public Works and Urban Management	Burundi	2009	SURR	Urban upgrading
P075566	LS-Integr Transp SIL (FY07)	Lesotho	2007	Transport	Roads and highways
P090075	ML-Transp Sec SIL 2 (FY07)	Mali	2007	Transport	Roads and highways
P093963	CN-Guiyang Transport	China	2008	Transport	Roads and highways
P102000	GH-Transport Project SIL (FY09)	Ghana	2009	Transport	Roads and highways
P102368	BW-Integrated Transport SIL (FY09)	Botswana	2009	Transport	Roads and highways
P114292	HT Emerg Bridge Reconst and Vulnerab Reduc	Haiti	2009	Transport	Roads and highways
P075566	LS-Integr Transp SIL (FY07)	Lesotho	2007	Transport	Urban transport
P090075	ML-Transp Sec SIL 2 (FY07)	Mali	2007	Transport	Urban transport
P100619	GH-Urban Transport Project SIL (FY07)	Ghana	2007	Transport	Urban transport
P083581	VN-HANOI URBAN TRANSPORT	Vietnam	2008	Transport	Urban transport
P090335	CN-GEF-WB Urban Transport Partnership	China	2008	Transport	Urban transport
P092631	CN-Xi'an Sustainable Urban Transport	China	2008	Transport	Urban transport
P093963	CN-Guiyang Transport	China	2008	Transport	Urban transport

P103633	TZ-Second Central Transport Corridor	Tanzania	2008	Transport	Urban transport
P106038	BR Sao Paulo Trains and Signalling	Brazil	2008	Transport	Urban transport
P102000	GH-Transport Project SIL (FY09)	Ghana	2009	Transport	Urban transport
P102368	BW-Integrated Transport SIL (FY09)	Botswana	2009	Transport	Urban transport
P113099	LR-Urban and Rural Infra. Rehab. Project	Liberia	2009	Transport	Urban transport
P114008	AR-GEF Sustain. Transp. and Air Quality	Argentina	2009	Transport	Urban transport
P114292	HT Emerg Bridge Reconst and Vulnerab Reduc	Haiti	2009	Transport	Urban transport
P086768	Odra River Basin Flood Prot	Poland	2007	Water	Flood and drought
P098948	Inland Waters Project	Croatia	2007	Water	Flood and drought
P101829	CN Xining Flood and Watershed Mgmt	China	2009	Water	Flood and drought
P071259	ZM-Water Sector Performance Improv (FY07)	Zambia	2007	Water	Water supply and sanitation
P077752	CN-SHANDONG ENVMT 2	China	2007	Water	Water supply and sanitation
P081776	CN-GUANGDONG/PRD2	China	2007	Water	Water supply and sanitation
P082295	VN-Coastal Cities Envmt Sanit.	Vietnam	2007	Water	Water supply and sanitation
P084002	CM-Urban and Water D. SIL (FY07)	Cameroon	2007	Water	Water supply and sanitation
P087154	TZ-Water Sector Support SIL	Tanzania	2007	Water	Water supply and sanitation
P089011	BR Municipal APL1: Uberaba	Brazil	2007	Water	Water supply and sanitation
P089082	PH-GEF-IF-MANILA SEWERAGE 3	Philippines	2007	Water	Water supply and sanitation
P092618	CN-LIAONING MED CITIES INFRAS 2	China	2007	Water	Water supply and sanitation
P096213	NAT'L WATER SUPPLY and SAN	Azerbaijan	2007	Water	Water supply and sanitation
P099811	TN-Tunis West Sewerage	Tunisia	2007	Water	Water supply and sanitation
P101432	UY APL2 OSE	Uruguay	2007	Water	Water supply and sanitation

P102527	GPOBA W3-Morocco Urban WSandS Access Pilot	Morocco	2007	Water	Water supply and sanitation
P103881	HN WATER AND SANITATION PROGRAM	Honduras	2007	Water	Water supply and sanitation
P104945	GPOBA W3: Mozambique Water	Mozambique	2007	Water	Water supply and sanitation
P087224	CN-Han River Urban Environment	China	2008	Water	Water supply and sanitation
P094650	IQ—Emergency Water Supply	Iraq	2008	Water	Water supply and sanitation
P095337	URBAN INFRASTRUCTURE	Ukraine	2008	Water	Water supply and sanitation
P096367	KE-Water and Sanitation Srv Impr (FY08)	Kenya	2008	Water	Water supply and sanitation
P102529	GPOBA W3: <i>Jakarta Water</i>	Indonesia	2008	Water	Water supply and sanitation
P104566	MZ-Water Services and Inst. Support	Mozambique	2008	Water	Water supply and sanitation
P104943	GPOBA W3: OBA in Kampala-Water Connec	Uganda	2008	Water	Water supply and sanitation
P106775	GPOBA W3: <i>Manila Water Supply</i>	Philippines	2008	Water	Water supply and sanitation
P106794	GPOBA W3: Cameroon Water	Cameroon	2008	Water	Water supply and sanitation
P109961	NAT'L WATER SUPPLY and SAN II	Azerbaijan	2008	Water	Water supply and sanitation
P054221	DO Water and Sanit in Tourist Areas	Dominican Republic	2009	Water	Water supply and sanitation
P090374	VN-GEF-IF-Coastal Cities	Vietnam	2009	Water	Water supply and sanitation
P091092	DRC Urban Water Supply Project (FY09)	Congo, Dem. Rep.	2009	Water	Water supply and sanitation
P093988	BD: Dhaka Water Sup and San. Project	Bangladesh	2009	Water	Water supply and sanitation
P094315	BR Municipal APL4: Sao Luis	Brazil	2009	Water	Water supply and sanitation
P096360	AO-Water Sector Institutional Dvlp	Angola	2009	Water	Water supply and sanitation
P096926	CN-Jiangsu Water and Wastewater Project	China	2009	Water	Water supply and sanitation
P101190	WATER SUPPLY AND SANITATION	Belarus	2009	Water	Water supply and sanitation
P102732	COASTAL CITIES POLLUTION CONTROL 2	Croatia	2009	Water	Water supply and sanitation

P105590	GPOBA W3: Surabaya Water Supply	Indonesia	2009	Water	Water supply and sanitation
P106909	BF:Urban Water Sector Project	Burkina Faso	2009	Water	Water supply and sanitation
P110092	NI Greater Managua Water and Sanitation	Nicaragua	2009	Water	Water supply and sanitation





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