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Performance Evaluation in LAC Urban DRR Programming: The Neighborhood Approach

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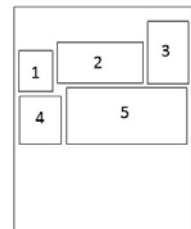
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Front cover photo composition
1- Mixco, Guatemala, Photo A01
2- Medellín, Colombia, Photo A01
3- Anse-à-Foleur, Haiti, Photo WCDO
4- Lima-Independencia, Peru, Photo PREDES
5- Lima, Peru, Photo V. Sandoval



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Performance Evaluation in LAC Urban DRR Programming: The Neighborhood Approach

Abstract

The goal of this evaluation is to improve the understanding of the Urban Disaster Risk Reduction (DRR) programming carried out in Latin America and The Caribbean, and supported by the United States Agency for International Development's Office of U.S. Foreign Disaster Assistance (USAID/OFDA). The study focused on eight DRR projects awarded by USAID in Colombia, Guatemala, Haiti, Honduras, Jamaica, and Peru, between FY2012 and FY2016. The projects applied the USAID Neighborhood Approach (NA) to find practical and workable solutions for DRR in densely populated informal urban settlements.

Two objectives and specific questions were defined for this evaluation: (1) the effectiveness and (2) the sustainability of the NA. The study comprised an extensive literature review, followed by a mixed research method, including surveys, focus groups, and interviews; disaster risk modeling; georeferencing analysis; and engineering inspections. Finally, an integrative process—triangulation—was used to analyze the data obtained from multiple theoretical positions.

The study confirmed that neighborhoods are a living fabric of social, economic, and physical features that provide the residents of a particular territory with an identity, a sense of security, safety, and familiarity. The USAID-NA expands the consideration of DRR interventions beyond individuals and households to a settlement approach, addressing critical disaster risk drivers and development gaps, and encouraging a long-term vision. The study showed the need to balance physical and social interventions to match individual and collective needs, support community cohesion and self-determination, and meet expectations associated with the common good and community resilience.

Performance Evaluation in LAC Urban DRR Programming: The Neighborhood Approach

Executive Summary

This report presents the results of the evaluation of the Urban Disaster Risk Reduction (DRR) programming in the Latin American and Caribbean (LAC) region supported by the United States Agency for International Development's Office of U.S. Foreign Disaster Assistance (USAID/OFDA). The goal of this performance evaluation is to improve USAID/OFDA's understanding of the performance and outcomes of the urban DRR programs the Agency supports in LAC. Specifically, the evaluation focuses on the effectiveness and sustainability of eight selected USAID/OFDA-funded urban DRR projects that utilized the Neighborhood Approach (NA), which were awarded in six countries (Colombia, Guatemala, Haiti, Honduras, Jamaica, and Peru) between FY2012 and FY2016.

The Neighborhood Approach is an innovative strategy adopted by USAID to find practical and workable solutions for DRR in densely populated informal urban settlements. The concept of the Neighborhood Approach became more utilized after the 2010 Haiti earthquake. Since 2012, it has been introduced into different Latin American and Caribbean countries.

Two objectives were defined for this performance evaluation: (1) the effectiveness and (2) the sustainability of the Neighborhood Approach. The Statement of Work (SOW) defined a specific set of questions for each objective that informed the evaluation design. The evaluation included a third objective on the programming strategy itself, including the Annual Program Statement (APS), programming implementation, alliances, and national counterparts.

To address USAID's evaluation questions for the objectives of effectiveness and sustainability, the research design began with an extensive literature review, followed by a mixed research method, including qualitative and quantitative approaches, such as seismic risk modeling for the eight projects selected; landslide risk modeling for four projects; and tropical cyclone risk modeling for one project. In addition, georeferencing and urban pattern analysis were used in the eight projects selected. Site visits and engineering inspections of key physical and environmental interventions in the eight projects also took place. Surveys, focus groups, and interviews were conducted in eight neighborhoods across the six project countries to gather primary data, following an Institutional Review Board (IRB)-approved research protocol. Finally, using an integrative process—triangulation—was used to analyze the data obtained in this study from multiple theoretical positions.

The findings include tables that present key data extracted from surveys, focus groups, interviews and site visits, allowing readers to draw comparisons across projects and countries. This section also includes key project interventions as well as the result of the indices that were prepared for this evaluation regarding neighborhood status in terms of urban informality, social cohesion, DRR, disaster risk governance, and the contribution of the NA project to the current status. These findings were selected from an extensive compilation of documents generated during the evaluation, the synthesis of which has been included in the annexes. The complete reports are part of a body of documents that supports the study and will serve as the basis for the preparation of thematic peer-reviewed manuscripts whose publication will help build a DRR evidence-based catalog.

Although the eight projects evaluated shared NA characteristics, each project is unique and was designed to respond to community needs and distinct socio-economic and cultural features, thus framing each in specific realities and contexts. Following is a summary of the findings of the questions posed by USAID to guide the evaluation. The first four questions deal with the objective of **effectiveness**. The last three questions are concerned with project **sustainability**.

1. To what extent have projects implemented under a Neighborhood Approach contributed to reducing community disaster hazard risks in targeted urban communities in the selected projects?

Four trajectories or pathways of influence were used to reduce community disaster risk:

- 1) NA interventions and features associated with secure land occupation. Two key interventions illustrate a successful approach to secure land occupation: a) the land tenure initiative implemented in Portmore, Jamaica, with support from Habitat for Humanity (HfH); and b) relocating at-risk communities in Tegucigalpa, Honduras, with support from the project implementer GOAL.
- 2) Sufficient and resilient livelihoods. Two main NA initiatives demonstrate effective DRR: a) the small business approach used by Global Communities in Medellín, Colombia; and b) the network of pulperías (grocery stores) implemented by GOAL in Tegucigalpa, Honduras.
- 3) Robust and resilient ecosystems. Three different NA projects in Lima, Peru implemented afforestation projects, initially designed to reduce the risk of rocks falling from slopes and to recover the fragile ecosystem lost over the past decades. Two other implementers, COOPI and Save the Children, later replicated the project initially designed by PREDES.
- 4) Adequate disaster risk and emergency management. Physical works such as pathways, access roads, retaining walls and drainage systems are the axes of risk reduction in neighborhood projects. Pathways were common to the six projects in Central and South America, due to the location of settlements on steep slopes. Retaining walls were designed and built in a variety of shapes and sizes to protect against landslides. Infrastructure such as channels to manage the runoff in Port-de-Paix, and gabions in Anse-à-Foleur were built by World Concern in Haiti, and proved to be highly effective during the passage of Hurricane Irma in 2017. Drainage systems were constructed that ranged in magnitude from small works in the projects in Lima, Medellín, Guatemala and Honduras, to more complex systems, such as the one built in the Tegucigalpa project.

2. Which aspects of the urban DRR Neighborhood Approach are most effective? Which aspects of the urban DRR Neighborhood Approach are least effective?

To address this question, we used two different approaches: 1) Life Satisfaction Analysis (LSA) to measure the level of well-being attributed to the NA projects' interventions and 2) Cost-Benefit Analysis (CBA) to calculate and compare benefits and costs of the specific NA interventions selected. The LSA showed that the categories with the highest impact on life satisfaction improvement were physical works and gains in social mobilization. Neighborhoods that received a community empowerment intervention (social mobilization category) increased their life satisfaction by 0.65 points. Considering that on average, the life satisfaction of all neighborhoods in the study was 2.46, the community empowerment intervention produced an increase in life satisfaction of nearly 27%. Other categories with interventions that significantly impacted life satisfaction were livelihoods and financial mechanisms, and institutional arrangements.

The CBA of the DRR interventions revealed that overall, the USAID project interventions had cost-benefit ratios (BCRs) greater than one point, with the access paths being the most cost-beneficial. A BCR of one indicates that the discounted benefit of implementing an intervention equals its cost. The BCR of physical interventions such as access paths ranged from 6.48 in Rímac to 12.16 in Medellín. Using an average value of the statistical cost of life, the BCR for access paths increases to 98.9 and 47.43, respectively, for Medellín and Rímac. The drainage canal in Port-de-Paix, Haiti, yielded a BCR of 13.19, valued for benefits from avoided loss of household assets and increase in productive business days. Sanitation interventions, such as the septic tank in Mixco, obtained a BCR of 1.62. Benefits were projected for certain interventions, such as the land tenure registration effort in Portmore, Jamaica, for which a target has not yet been set.

3. To what extent is the Neighborhood Approach effective as compared to more traditional DRR approaches in LAC?

We identified six DRR categories to conduct a thorough comparative analysis of the NA with other initiatives: 1) area-based; 2) market-based; 3) system-based; 4) institutional-based; 5) individual/household-based; and 6) operational. Some of the DRR initiatives fall into more than one category. The NA promoted by USAID can be primarily classified as area-based, but it further incorporates other DRR criteria (market-based, system-based, institutional-based, individual/household-based, and operational-based). In addition, the concept of neighborhood used in the NA goes beyond the pure geographical meaning of the ‘area-based’ category: the neighborhood is a living fabric of social, economic, and physical features that provides the residents of a particular territory with an identity, a sense of security, safety, and familiarity. Our literature review revealed that institutions such as USAID, OXFAM, UNDP, DFID, and the World Bank used area-based approaches to a certain extent, but without emphasis on precariousness, informality, and risk exposure.

4. What factors influence the effectiveness (or lack thereof) of urban DRR programs using the Neighborhood Approach in each country of focus?

We considered two categories of influencing factors for the effectiveness of urban DRR programs using the NA: 1) reflecting on internal aspects of each project and their immediate environment and 2) referring to the economic, political and social contexts in a broader sense, that is, outside the project’s control. For instance, in the three projects in Lima (Carabayllo, Independencia, and Rímac) we identified several emergencies triggered by ‘El Niño’ in 2017 in northern Peru that created a ‘window of opportunity’ to introduce innovative DRR practices at different government levels. We also observed that local governments with a greater capacity in urban development avoided silos, fostered cross-sectorial integration, and tended to mainstream DRR practices within urban development. This was particularly effective and a common feature in Carabayllo, Medellín, Mixco, and Tegucigalpa. Other external factors included the volatile political context in Mixco; turnover of municipal personnel in Lima; organized crime and violence in Medellín; and specific land-tenure issues observed in Portmore.

5. To what extent are communities able to integrate DRR practices and take ownership of the Neighborhood Approach? What barriers to utilization of the Neighborhood Approach exist?

We developed a community involvement indicator, using qualitative analysis of focus groups and interviews, to assess four aspects of community involvement: a) active involvement in planning; b) allocation of human and financial resources; c) active involvement in maintenance; and d) social control. In general terms, the communities were able to integrate DRR practices, although only in few cases took ownership of the Neighborhood Approach as a whole. With significant differences among countries, neighbors in Mixco, Medellín, Tegucigalpa, and the three projects in Lima demonstrated appropriation of DRR practices such as better garbage and waste water management for reducing flood impacts and afforestation and gardening to stem the risk of landslides and rockslides. People were more conscious of the risks they face and able to develop mechanisms to cope with and reduce them. In some cases, such as Medellín and Mixco, people achieved a certain level of empowerment as they started to demand more attention and action from local authorities.

6. To what extent are municipal and national authorities incorporating and institutionalizing the urban Neighborhood Approach? What evidence (including, but not limited to, policy or urban planning changes) is there that municipal or national authorities are managing urban risk differently due to USAID/OFDA’s urban DRR Neighborhood Approach?

A local government involvement indicator was developed using qualitative analysis of interviews and field observations to assess four aspects of local government involvement: a) active involvement in planning; b)

allocation of human and financial resources; c) active involvement in maintenance; and d) regulatory action. In cases like Carabayllo, Independencia, Mixco, Medellín, and Tegucigalpa, the municipalities incorporated new practices, such as the use of GIS and social media for DRR; participatory design and execution of physical works; inter-sectorial working groups for neighborhood development; and inclusion of DRR measures within municipal budget plans. According to our field observations and interviews, the best institutional ownership was achieved in Tegucigalpa, Mixco, and Medellín, primarily due to three factors: 1) the level of municipal autonomy to intervene in DRR; 2) implementers succeeded in creating inter-institutional and inter-sectorial (including private sector) articulations based on agreements and communication, and then translated these into action; and 3) the willingness and commitment of key actors at the highest level of municipal government, such as mayors or municipal managers. On the other hand, factors that limit the institutionalization of the NA were pointed out by the participants from Rimac, Portmore, and Haiti, including: 1) personnel turnover in municipalities; 2) a lack of willingness and commitment from local authorities; and 3) implementer's lack of capacity/experience in involving local authorities.

7. What enabling factors and factors impeding success contribute to sustainability of the urban DRR Neighborhood Approach? How sustainable could the targeted Urban DRR programs be without external donor support?

Five categories were defined to address the sustainability of the Neighborhood Approach projects: social mobilization, institutional arrangements, physical works, environmental improvements and financial mechanisms. Each of these categories comprised both enabling factors and factors that hinder success. Beyond the enabling and impeding factors mentioned, the study found a circumstance called concatenation. Concatenation refers to the capacity of a project to advance on the achievements of other projects or initiatives. In the same way, the project can also offer the opportunity to other projects and initiatives to build on its own outputs or outcomes. Anse-à-Foleur offers a good example. The NA project provided an excellent quality pipeline from the source of the water to the town. Subsequently the World Bank built ten water tanks, followed by the municipality, which built the distribution network. Another example comes from the NA in Tegucigalpa, where a public university in Honduras took advantage of JICA-sponsored geological studies to advance the studies required by the USAID-sponsored NA project. At the same time, the NA project prepared digital elevation mapping based on LIDAR technology (a detection system that uses light from a laser), which now serves the municipality and other projects supported by the international community.

Beyond the characteristics that define the NA, such as geographic focus, active participation, and sectoral concentration, the NA program strategy has been characterized by closer cooperation among USAID implementers and partners, beneficiary communities, and local and national governments. Additionally, the introduction of techniques such as systematization and the Post-Project Review stressed the importance of processes, and a closer follow-up to project implementation, with special attention to the long-term impacts and the outcomes' sustainability. USAID has fostered the exchange of practices and experiences among implementers, which has resulted in a substantial collective learning process, one that is unique in terms of depth and quality. Most of the NA projects lasted beyond the period initially awarded, whether through extensions or applying for an unsolicited proposal to complete, replicate or expand their scope.

This study detected another clear trend: a significant impact at national and even regional level in the different countries where there is a second or even third wave of initiatives derived from the initial project. Cases that support this assertion: 1) Jamaica: Habitat for Humanity defined a land tenure strategy that will be extended to the whole country, involving other institutions and civil society organizations; 2) Peru: PREDES along with the mayor of Lima, used afforestation as a strategy for land use management and DRR, now recognized internationally by FAO; 3) Honduras: GOAL, along with the municipality of Tegucigalpa, the Inter-American Development Bank, the University of Manchester, and the Nordic Fund promote the NA approach to develop a project to adapt assets to climate change. Additionally, GOAL is now replicating the Honduras NA experience in Haiti; 4) Colombia: the NA project implemented by Global Communities, Corporación Ayuda Humanitaria and Pontificia University in Medellín, expanded

the municipal DRR approach by reaching out to communities, and now it has been integrated into the city's resilience strategy, as part of the 100 Resilient Cities movement. In addition, the NA project inspired a new DRR initiative geared toward small commerce and merchants in precarious areas of the city; 5) Guatemala: Under the leadership of PCI, the NA project convened various local actors, among them the private sector—Cementos Progreso and AMANCO—expanding the NA impact toward many other cities. On a larger scale, PCI contributed to a proposal to change the public housing policies in the country, with support from international organizations and experts such as Build Change and Elemental, as well as establishing alliances with other NA implementers such as GOAL.

The study also included an internal assessment of the NA strategy within USAID. The respondents strongly agreed that the NA supports DRR, the LAC DRR Plan 2015-2019, and the Sendai Framework. The main technical or programmatic challenges to implementing the NA were community participation, followed by a lack of resources in the community; issues with sustainability; and having the right partners with expertise in community development. The main managerial and financial challenges for partners in implementing the NA were identified as government or legal restrictions, followed by the lack of willingness of local governments to institutionalize the policies and activities associated with the program; underestimation by partners of costs during the proposal stage; lack of implementation time, due to the award's stated period of performance; lack of community leaders or other local partners; and lack of financial resources in the community.

In conclusion, the USAID NA expands the consideration of DRR interventions beyond individuals and households to a settlement approach, addressing critical disaster risk drivers and development gaps, and encouraging a long-term vision. The study showed the need to balance physical and social interventions to match individual and collective needs and expectations associated with the common good. Thus, protecting the neighborhood and supporting its cohesion and self-determination, are important strategies to build community resilience. In response to the daily challenges experienced in informal settlements, there is clearly a need to contribute to social mobilization to collectively overcome obstacles such as poverty, marginalization, insecurity and despair. This study shows a broader scope than the one initially foreseen for the NA, identifying different strategies that can stand alone, such as land tenure, rain and storm-water management, housing relocation, and afforestation, among others. The use of state-of-the-art technologies and the exploration and definition of units of measurement were essential to answering the questions proposed by USAID and mark the beginning of a second study phase—the preparation of a series of peer-reviewed publications that will serve to build a catalog of evidence-based DRR practices.

Based on the results obtained in this study and the NA Post-Project Review process conducted in 2016-2017, the following recommendations are proposed regarding the USAID NA urban DRR strategy:

1) Continue fostering the NA strategy with some adjustments to the RFA process such as: a) NA projects must have an ideal duration of three years and never less than two years; b) NA projects should be formulated in two stages, the first one encompassing diagnosis, awareness and social mobilization, followed by a second phase of implementation and transfer. The proposals must contemplate a process of programmatic adjustment between the two stages.

2) The NA could be diversified to allow different types of proposals that foster DRR and resilience-building, using the principles of geographic focus, active participation, and sectoral approach through projects that respond to issues associated with DRR of critical incidence such as land tenure, urban drainage systems, afforestation, precariousness, housing retrofitting, among others.

3) The NA projects should have a plan, from the outset, to deal with the inherent uncertainty and lack of continuity in local public administration policies and practices, as well as to face the incongruities between national and local regulations and processes.

4) Intervention costs centers must be established, with files that conserve technical studies, designs, and technical specifications to maintain a permanent archive. The electronic records must be submitted to USAID at the end of the project.

1. Introduction

This report presents the results of the evaluation of the Urban Disaster Risk Reduction (DRR) programming in Latin American and Caribbean (LAC). The goal of the evaluation was to improve USAID/OFDA's understanding of the performance and outcomes of the urban DRR programs that the Agency supported in the LAC region. Specifically, the evaluation focused on the effectiveness and sustainability of eight selected USAID/OFDA-funded urban DRR projects that utilized the Neighborhood Approach. These projects were awarded in six countries (Colombia, Guatemala, Haiti, Honduras, Jamaica, and Peru) between FY2012 and FY2016. The findings of this evaluation will inform future programming decisions and enable adjustments to ongoing USAID/OFDA urban DRR programming in the LAC region and across the globe. More broadly, the findings of this evaluation will enhance the evidence base related to the Neighborhood Approach as a DRR tool.

Background

The Neighborhood Approach is an innovative strategy adopted by USAID to find practical and workable solutions for disaster risk reduction in densely populated informal urban settlements. The concept of the Neighborhood Approach reached was recognized after its implementation in Haiti following the 2010 earthquake. Since 2012, it has been introduced into other LAC countries.

Florida International University (FIU), through its contractual agreement with USAID/OFDA, has been involved in the Neighborhood Approach since its inception in LAC. FIU led two processes: 1) the systematization of the first four projects from 2011 until 2015, carried out in Haiti, Guatemala, and Peru, and 2) the post-project review of these same initial Neighborhood Approach projects in 2016, which was carried out 12–18 months after completion of the projects. Additionally, at USAID/OFDA's request, FIU participated in the kick-off meetings in which other Neighborhood Approach projects were launched in Haiti, Colombia, and Jamaica. FIU also worked with USAID/OFDA-LAC advisors during field visits to follow-up on project implementation (Honduras, Peru, and Colombia).

Evaluation Objectives

Two objectives were defined for this performance evaluation: understanding the **effectiveness** and the **sustainability** of the Neighborhood Approach. The Statement of Work (SOW) defined a specific set of questions for each objective that informed the design of this evaluation.

Objective 1: Effectiveness

1. To what extent have projects implemented under a Neighborhood Approach contributed to reducing community disaster hazard risks in targeted urban communities in the selected projects?
2. Which aspects of the urban DRR Neighborhood Approach are most effective? Which aspects of the urban DRR Neighborhood Approach are least effective?
3. To what extent is the Neighborhood Approach effective as compared to more traditional DRR approaches in the LAC region?
4. What factors influence the effectiveness (or lack thereof) of urban DRR programs using the Neighborhood Approach in each country of focus?

Objective 2: Sustainability

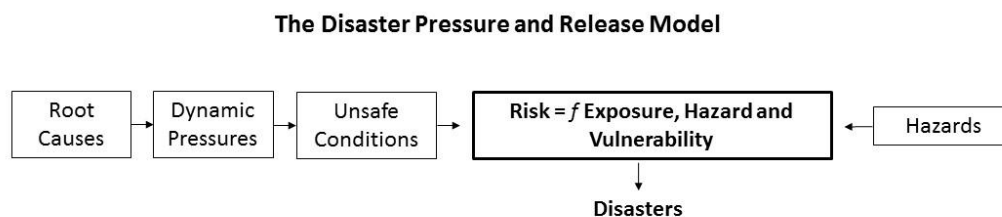
5. To what extent are communities able to integrate DRR practices and take ownership of the Neighborhood Approach? What barriers to utilization of the Neighborhood Approach exist?
6. To what extent are municipal and national authorities incorporating and institutionalizing the urban Neighborhood Approach? What evidence¹ is there that municipal or national authorities are managing urban risk differently due to USAID/OFDA's urban DRR Neighborhood Approach?
7. What enabling factors and factors that impede success contribute to sustainability of the urban DRR Neighborhood Approach? How sustainable could the targeted Urban DRR programs be without external donor support?

The evaluation included a third objective on the programming strategy itself, including the APS, programming implementation, alliances, and national counterparts.

2. Theoretical Framework

Two major themes interact to build the theoretical framework for the current evaluation. The first refers to disaster risk, understood as: “The potential loss of life, injury, or destroyed or damaged assets that could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity” (United Nations, 2016: 14). Beyond a simple formula, disaster risk is the condition resulting from a complex process of accumulation, as explained by Blaikie et al. (1994) through the pressure and release model.

Figure 1. Disaster Pressure and Release Model



Adapted from the Disaster Pressure and Release Model proposed by Blaikie et al. (1994)

Figure 1 attributes risk conditions to a progression that originates in root causes: ideological processes of an economic, demographic, and political nature that influence power relationships and the allocation and distribution of resources in a society. These manifest in dynamic pressures of population growth, migration, accelerated urbanization, etc., which in turn, result in and are seen as unsafe conditions, such as the segmentation of society; unstable livelihoods; occupation of insecure land with an exposure to hazards; and inadequate emergency management. More recently, these processes, described by Blaikie et al., are called underlying disaster risk drivers or “processes or conditions, often development-related, that influence the level

¹ Including, but not limited to, policy or urban planning changes.

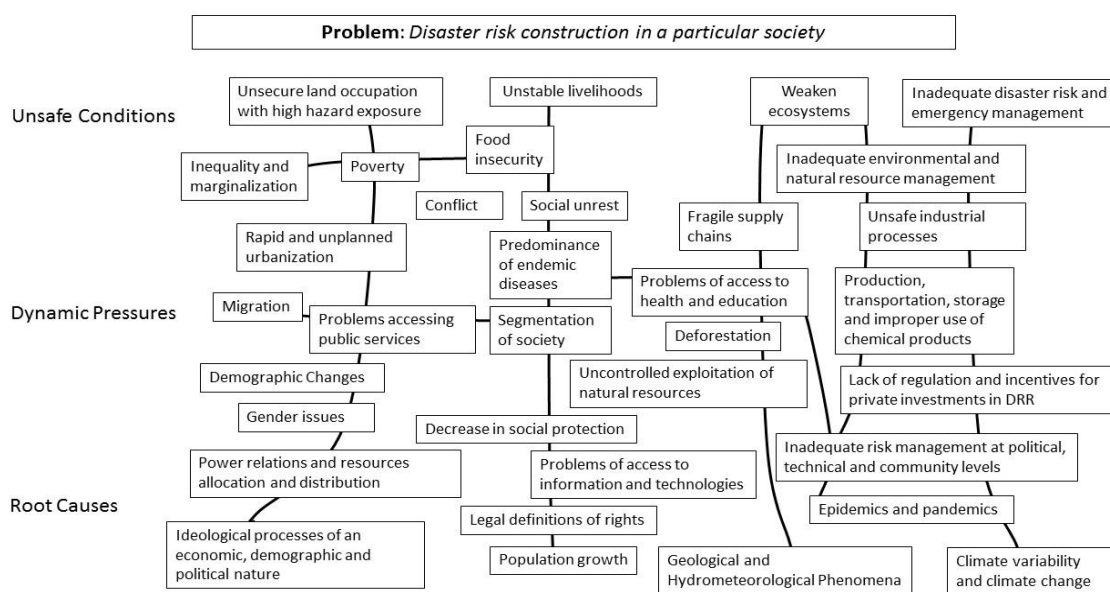
of disaster risk by increasing levels of exposure and vulnerability or reducing capacity” (United Nations, 2016: 24).

The second theme is represented by the high growth of urban informality and precariousness in recent decades, leading to the generation of slums or informal settlements. According to Habitat III (2015: 1), informal settlements are “residential areas in which 1) inhabitants have no security of tenure vis-à-vis the land or dwellings they inhabit, with modalities ranging from squatting to informal rental housing; 2) the neighborhoods usually lack, or are cut off from, basic services and city infrastructure; and 3) the housing may not comply with current planning and building regulations, and is often situated in geographically and environmentally hazardous areas.” According to Sandoval and Sarmiento (2018), approximately 924 million people lived in informal settlements or slums around the world in 2001, representing 31.6% of the world's urban population (UN-Habitat, 2003). The 2014 UN-Habitat report (2016) indicates that 104.8 million now live in informal settlements in LAC (21.1%).

An important segment of the world’s population exists in conditions of chronic poverty in urban areas, exposed to stress situations and shocks associated with events of natural or anthropic origin, in a continuous process of disaster risk construction and with very low levels of resilience. In this context, resilience is understood as: “the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth”(USAID, 2012: 5).

Sarmiento (2017: 36) defines the problem as: "The construction of disaster risk in a particular society (including population, territory, infrastructure, goods, and services) that define and determine the potential magnitude of the effects in the presence of a specific hazard(s)." He designs the problem tree using the Blaikie et al. (1994) model, identifying the underlying risk factors or root causes, and then, the main and secondary causes, resulting in a process of concatenation and hierarchy that reaches the visible manifestations of the analyzed problem.

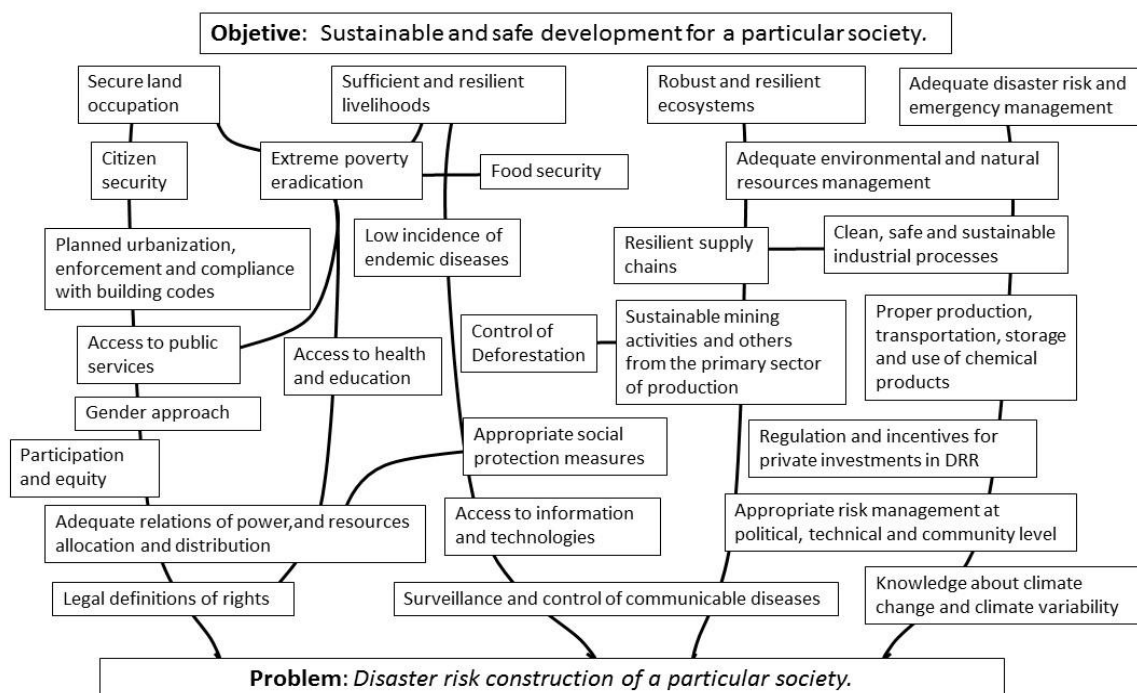
Figure 2. Disaster Risk Construction in a Society



Translated and adapted from Sarmiento (2018)

Using the Theory of Change, Sarmiento (2017) advances in the identification of domains of change or key points of influence (intervention domains), the main areas in which change must occur in order to reach the desired objective's impact: 'sustainable and secure development for a particular society.'

Figure 3. Sustainable and Safe Development in a Society



Translated and adapted from Sarmiento (2017)

Under the category of unsafe conditions, four domains are identified: 1) insecure land occupation with high hazard exposure; 2) unstable livelihoods; 3) weakened ecosystems; and 4) inadequate disaster risk and emergency management. Additionally, poverty, accompanied by inequality, marginalization, and food insecurity aggravate the conditions.

The resulting trajectories are, at the same time, pathways of influence through which action must be taken to influence disaster risk determinants. The actions are taken through specific interventions: 1) secure land occupation; 2) sufficient and resilient livelihoods; 3) robust and resilient ecosystems; and 4) adequate disaster risk and emergency management. It is important to also address the issue of extreme poverty, which influences two of the four identified domains.

This framework allows one to identify the intersection of the pathways of influence as a crosscutting topic in the NA's priority sectors: Shelter and Settlements (S&S); Economic Recovery and Market Systems (ERMS); Water, Sanitation, and Hygiene (WASH); and Natural and Technological Risks (NTR).

In addition to these sectors, the evaluation expanded its focus to measure actions geared toward reinforcing community resilience: strengthening social cohesion processes and governance mechanisms, and the well-being attributed to the project's interventions (USAID, 2012).

3. Research Methods

To address USAID’s evaluation questions for the objectives of effectiveness and sustainability, the research design began with an extensive literature review, followed by a mixed research method, including qualitative and quantitative approaches:

- Literature review on DRR approaches and interventions implemented in the LAC region.
- Seismic risk modeling for the eight projects selected, landslide risk modeling for four projects, and tropical cyclone risk modeling for one project.
- Georeferencing and urban pattern analysis for the eight projects selected.
- Site visits and engineering inspections for key physical and environmental interventions in the eight projects selected.

In order to gather primary data from the selected projects, surveys, focus groups, and interviews were conducted following an IRB-approved research protocol. These techniques were conducted in the eight neighborhoods across the six different countries where the DRR projects were implemented. The study involved both males and females and the subjects of the surveys, interviews, and focus groups were adults (aged 18 and over with no upper age limitation).

Surveys

The targeted subject for each survey was the head of a household or spouse in the selected neighborhood. We targeted approximately 40 surveys per project and 320 surveys in total for all eight selected projects. However, the survey process was completed with an average of 44 surveys per project, and a total of 349 surveys. The estimated size of the sample was carried out using the sample size calculator, Raosoft Inc. (Bird, D. and Dominey Howes, D., 2008), with a margin of error of 3.94% and a 95% confidence level, resulting in $n=349$. Subsequently, the sample was distributed in proportion with the estimated population in the selected neighborhoods. We estimated an average of 100 households per project that benefitted directly from the NA projects. The survey consisted of a total of 39 questions grouped into four sub-topics: social cohesion, DRR, urban informality, and Life Satisfaction Analysis (LSA). A preceding section on demographics and housing conditions collected information on household identification, demographic and socioeconomic aspects of household respondents, and housing structural details. The heads of households shared their experience of the NA project and its impacts on their life and community. Through the survey questions, we were able to gauge the contribution of the project to improving social cohesion, disaster risk reduction, and disaster risk governance in the neighborhood, and the impact of the project on the degree of urban informality/precariousness. The section on LSA measured the value of non-market impacts of interventions, and the subjective well-being reported due to the interventions of the projects.

Focus Group Studies

We conducted one focus group study for each of the eight NA projects. Focus groups for each neighborhood included approximately 8–12 subjects: community leaders, women, people with disabilities, and elders who lived in the selected neighborhood. These studies gathered the opinions of the representatives of these neighborhoods on the effectiveness and sustainability of the project interventions.

Interviews

The research team conducted approximately 8–10 semi-structured interviews per DRR project with local and national government officers, civil society actors, academics, and private sector partners. A total 105 informants participated in the interviews. Interviewees were approached using a snowball stratified sampling technique, as described by Atkinson and Flint (2004). If more than one intervention was carried out in a location, interviews for those interventions were conducted during the same session with national authorities. Where municipal associations or sub-national mechanisms were involved in the project implementation or replication, officers in charge of those mechanisms were interviewed. In addition, an interview for each project implementation manager or designee was conducted.

Together with USAID M&E, interviews were carried out with USAID officers in OFDA (Washington, D.C. and LAC regional office) to review the USAID/OFDA program strategy.

We developed an integrative strategy, also called triangulation, wherein we purposefully analyzed the data obtained in this study from multiple theoretical positions. This helped increase the validity of the evaluation and research findings to answer and satisfactorily address USAID's questions.

4. Evaluation Limitations

The design of the evaluation and the selected methodologies allowed the different actors involved—community members, implementers and partners, local and national authorities—to register perceptions, attitudes, knowledge and advances in risk management and disaster management associated with the implementation of the projects. However, because community members are highly mobile, during the evaluation of some projects, not all the actors who had been involved could be located. Another important limitation was the collection of information related to designs, technical specifications, and budgets of the project interventions that had concluded between one and three years earlier. Likewise, the high turnover of public employees was evident—with the consequent ignorance of the NA project—the reason why we resorted to former employees or employees who had changed their position within the same organization for interviews and information gathering. Despite these limitations, returning to the participating public institutions during the evaluation allowed the concerned actors to revisit the issue and their attention to informal settlements exposed to disaster risk. For the communities, the presence of the evaluators was seen as a sign of commitment and trust toward the donor, and for the implementers, an act of accountability. Given the conditions of insecurity in the neighborhoods where the evaluation was carried out—common crime, drug trafficking, gangs, and other illicit activities—it was necessary to implement a careful safety plan for the whole team, limiting the working hours, ensuring appropriate clothing, and in some cases avoiding the use of electronic systems such as tablets for data capture and georeferencing of surveys.

This report contains the most relevant findings of the evaluation. However, given the volume of information and data collected, a second phase of the study will be necessary to prepare a series of peer reviewed manuscripts that will serve to build a catalog of evidence-based DRR practices.

5. Main Findings

This section contains the main evaluation's findings by project. The next four pages display seven tables containing project information and the indices prepared for this study in order to provide an order of magnitude, necessary for comparisons across projects and countries: 1) NA Projects Assessed; 2) NA General Features; 3) Urban Informality / Precariousness Index; 4) DRR Index; 5) Disaster Risk Governance Index; 6) Social Cohesion Index; and 7) Social Resilience Index. These indices used relevant data coming out of the surveys, transect walks and risk modeling. The following pages of this section address the findings related to each NA project and they are organized as follows:

Main Interventions - A table is built on the project transfer matrix. The first column refers to the intervention's category, the second identifies the project's outcome studied and a third column synthesizing the main findings coming from the transect walks (engineering and environmental inspections), interviews, and focus groups.

Urban Informality - Also referred here as precariousness. This study adopts the UN-Habitat definition of informal settlements: "...any specific place, whether a whole city or a neighborhood, as a slum area if half or more of all households lack [i] improved water, [ii] improved sanitation, [iii] sufficient living area, [iv] durable housing, [v] secure tenure, or combinations thereof. An area or neighborhood deprived of improved sanitation alone may experience a lesser degree of deprivation than an area that lacks any adequate services at all, but both are considered slums in this definition." (Castro et al. 2015: 110) Based on this definition we prepared an index composed of three sub-indexes: Legal, Physical, and Social (details in Annex 2) and applied it to each of the neighborhoods selected using the survey. Quintiles are used to create cut-off points, a statistical value of a data set that represents 20% of a given population. The first quintile represents the lowest fifth of the data, 1–20% in Green; the second quintile, 21%– 40% in Yellow; the third quintile, 41%– 60% in Orange; the fourth quintile, 61%– 80% in Ochre; and the fifth quintile represents the highest fifth, 81%– 100% in Red. Higher numbers mean higher informality/precariousness.

Disaster Risk Reduction - Based on the most recent United Nations terminology, this study adopts the DRR definition: "DRR is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development." (United Nations, 2016: 16). This study developed a DRR Index (details in Annex 2) to measure the perceived DRR status at the neighborhood level, and also measure the contribution of the NA project to the level of DRR found. Higher numbers mean higher DRR implementation.

Social Cohesion - The study adopted the Stanley (2003: 5) definition of social cohesion: "the willingness of members of a society to cooperate with each other to survive and prosper." Cohesion is a necessary driver of resilience. We developed a Social Cohesion Index (details in Annex 2), to measure the perceived social cohesion at the neighborhood level, and also measure the contribution of the NA projects to the level of social cohesion found. Higher numbers mean higher social cohesion.

Disaster Risk Governance - The study adopted the Disaster Risk Governance concept from United Nations (2016: 15), "The system of institutions, mechanisms, policy and legal frameworks and other arrangements to guide, coordinate and oversee disaster risk reduction and related areas of policy... Good governance needs to be transparent, inclusive, collective and efficient to reduce existing disaster risks and avoid creating new ones." This study built a Disaster Risk Governance Index (details in Annex 2) to assess the community associativity reported in the surveys, and the institutional involvement both at local and national level registered in the interviews and focus groups. Higher numbers mean higher disaster risk governance.

Table 1. Neighborhood Approach Projects Assessed During the Period Dec. 2, 2017 - Mar. 12, 2018

Country	Peru	Peru	Peru	Colombia	Guatemala	Haiti	Jamaica	Honduras
City	Lima - Carabayllo	Lima - Independencia	Lima - Rimac	Medellin	Mixco	Port-de-Paix	Portmore	Tegucigalpa
Project Title	Resilient Urban Neighborhoods and Districts in Lima Norte	Risk Reduction in Vulnerable Areas of Independencia District, Lima Province	Reinforcing Innovative Mechanisms for Arising Capacities in Disaster Risk Reduction in Rimac	Programa de Conocimiento y Reducción del Riesgo de Desastres	Barrio Mio	Community Initiatives in Disaster Risk Reduction (CIDRR)	Building Resilience and Capacities for Emerging Disasters (BRACED)	Operationalizing a Neighborhood Approach to Reduce Urban Disaster Risk in Latin America and the Caribbean
Award No.	AID-OFDA-A-14-00024	AID-OFDA-A-14-00025	AID-OFDA-A-14-00023	AID-OFDA-A-14-00026	AID-OFDA-A-12-00013	AID-OFDA-A-12-00012	APS-OFDA-A-14-	AID-OFDA- A-13-00023
IP	Save the Children/US	PREDES	COOPI	Global Communities	Project Concern International	World Concern Development Organization	Habitat for Humanity	GOAL
Dates	October 1, 2014--September 30, 2017	October 1, 2014—March 31, 2017	September 15, 2014—September 14, 2017	October 1, 2014—January31, 2017	Sept 28, 2012—Sept 30, 2016	September 6, 2012—March 31, 2014	September 2014 – April 2018	September 23, 2013—December 23, 2016
Goal	Urban neighborhoods and districts in Northern Lima increase their resilience to disasters through the adoption of risk-sensitive policies and practices.	Strengthened capacity of the community, local, and national stakeholders to disaster risk management in vulnerable peripheral urban settlements.	Reduced risk of disasters in the vulnerable neighborhoods of Rimac prone to multiple hazards.	Reduce the social and economic impact of disasters of highly vulnerable urban populations in Medellín, Colombia	High-risk urban neighborhoods are transformed into resilient, safe and productive communities.	Vulnerable populations enabled to identify risks associated with, and reduce the impact of, anticipated disasters on their communities.	Increasing the neighborhood's resilience through work at both the settlement and shelter level; contributing to the neighborhood's ability to formalize itself, connect to the municipality's redevelopment plan, and bring future investments.	Disaster risk reduced in three high-risk neighborhoods in Tegucigalpa with emphasis on the protection of vulnerable groups.
Sectors	Economic Recovery and Market Systems, Shelter and Settlements, Natural and Technological Risks, Risk Management Policy and Practice	Natural and Technological Risks, Risk Management Policy and Practice, Water, Sanitation and Hygiene, Shelter and Settlements	Water, Sanitation and Hygiene, Natural and Technological Risks, Risk Management Policy and Practice	Policy and Practice, Shelter and Settlements, and Economic Recovery and Market Systems.	Water, Sanitation and Hygiene, Economic Recovery and Market Systems, Shelter and Settlements	Water, Sanitation and Hygiene, Shelter and Settlements, Natural and Technological Risks	BRACED 1: Water, Sanitation and Hygiene, Shelter and Settlements, and Risk Management Policy and Practice. BRACED 2: Land tenure and neighborhood redevelopment plan	Water, Sanitation and Hygiene, Economic Recovery and Market Systems, Shelter and Settlements, Natural and Technological Risks, Risk Management Policy and Practice
Budget	\$1,894,843	\$1,303,302	\$1,012,662	\$1,708,726	\$3,082,151	\$1,608,992	\$1,688,000	\$1,377,444

Total \$13,676,120. This amount includes all projects described in the table.

Table 2. Neighborhood Approach Projects - General Features

NA General Features	Peru	Peru	Peru	Colombia	Guatemala	Haiti	Jamaica	Honduras
City	Carabayllo	Independencia	Rimac	Medellin	Mixco	Port-de-Paix	Portmore	Tegucigalpa
NA Area - Hectares	53.4	11.2	48.5	95.7	8.1	46.4	110.4	59.3
NA Built area - Hectares	42.6	8.1	44.8	131.0	4.8	14.1	104.3	53.4
House's surface area sqm	127.5	119.3	106.3	67.8	122.9	337.14	75.3	100.8
Total Households	3,338.3	678.1	4,214.3	19,333.1	389.5	419.4	13,854.6	5,299.8
Household members - Average	5	5	5	6	6	7	5	5
Total individuals	15,623.4	3,295.6	20,987.1	115,998.8	2,298.1	2,780.9	62,068.6	27,717.7
Population density - People/Hectare	293	295	433	1,211	285	60	562	467
sqm per person	27.24	24.54	21.34	11.29	20.84	50.85	16.80	19.28

Table 3. Neighborhood Approach Projects - Urban Informality / Precariousness Index

Urban Informality / Precariousness Index	Peru	Peru	Peru	Colombia	Guatemala	Haiti	Jamaica	Honduras
City	Carabayllo	Independencia	Rimac	Medellin	Mixco	Port-de-Paix	Portmore	Tegucigalpa
Legal (0-30)	18.44	11.11	13.29	8.12	6.02	22.32	19.53	10.95
a. Issues with land use and land tenure (0-10)	5.40	1.27	1.60	2.12	3.27	6.43	7.07	3.26
b. Unplanned settlements/Lack of compliance with urban planning & Zoning (0-10)	4.44	3.33	4.44	2.22	2.22	8.89	5.56	1.11
c. Issues with building regulations/Lack of compliance with building regulations (0-10)	8.61	6.51	7.25	3.78	0.53	7.00	6.91	6.59
Physical (0-40)	15.72	12.58	14.32	13.55	13.35	21.98	14.75	14.21
a. Issues with access to water, sewage, energy (0-10)	1.21	0.23	0.53	0.15	0.40	7.79	2.12	0.15
b. Deficient or poor housing conditions (0-10)	1.29	0.53	0.61	3.18	2.06	0.78	0.08	0.08
c. Overcrowding, environmental degradation (0-10)	4.85	4.09	5.45	3.64	5.08	4.81	4.11	5.61
d. Exposure to natural and human induced hazards (0-10)	8.38	7.73	7.73	6.58	5.81	8.61	8.44	8.38
Social (0-30)	4.91	5.38	6.27	5.43	4.30	8.12	5.31	6.27
a. Issues with access to social infrastructure: health, education, cultural, commercial (0-10)	3.27	2.78	2.64	2.34	3.27	4.68	2.07	3.85
b. Marginalization (0-10)	0.11	0.91	0.68	0.68	0.48	1.17	0.45	0.45
c. Violence and illegal activities (0-10)	1.53	1.68	2.95	2.41	0.55	2.26	2.78	1.97
Informality/precarioussness Index (0-100)	39.08	29.07	33.88	27.09	23.67	52.41	39.59	31.43

Table 4. Neighborhood Approach Projects – DRR Index

DRR Index	Peru	Peru	Peru	Colombia	Guatemala	Haiti	Jamaica	Honduras
City	Carabayllo	Independencia	Rimac	Medellin	Mixco	Port-de-Paix	Portmore	Tegucigalpa
1. Community has members trained in DRR	90.5	68.3	53.7	51.5	48.7	52.4	44.4	71.8
<i>Project contributed to it (Agree and strongly agree)</i>	<i>77.3</i>	<i>52.3</i>	<i>34.1</i>	<i>40.9</i>	<i>42.9</i>	<i>51.2</i>	<i>36.4</i>	<i>59.1</i>
2. Community has motivated members who support DRR	90.5	85.7	59.5	73.8	76.9	62.8	72.2	94.9
<i>Project contributed to it (Agree and strongly agree)</i>	<i>81.8</i>	<i>61.4</i>	<i>50.0</i>	<i>61.4</i>	<i>64.3</i>	<i>62.8</i>	<i>56.8</i>	<i>79.5</i>
3. Community has a functional EWS including drills	65.1	68.2	32.6	23.1	37.8	58.1	19.5	64.9
<i>Project contributed to it (Agree and strongly agree)</i>	<i>61.4</i>	<i>59.1</i>	<i>27.3</i>	<i>18.2</i>	<i>31.0</i>	<i>51.2</i>	<i>18.2</i>	<i>50.0</i>
4. Community involved in the emergency plan implementation	87.2	75.6	34.2	36.1	54.8	57.1	51.4	62.2
<i>Project contributed to it (Agree and strongly agree)</i>	<i>70.5</i>	<i>52.3</i>	<i>20.5</i>	<i>25.0</i>	<i>38.1</i>	<i>55.8</i>	<i>40.9</i>	<i>45.5</i>
5. Community involved in maintenance of projects' physical works	82.9	83.3	52.3	90.9	76.3	93.0	85.0	81.4
<i>Project contributed to it (Agree and strongly agree)</i>	<i>70.5</i>	<i>70.5</i>	<i>43.2</i>	<i>86.4</i>	<i>64.3</i>	<i>90.7</i>	<i>68.2</i>	<i>70.5</i>
6. Social Inclusion V+W	85.6	82.6	47.7	82.1	64.1	80.8	66.1	79.2
<i>Project contributed to it (Agree and strongly agree)</i>	<i>76.1</i>	<i>71.6</i>	<i>39.8</i>	<i>65.9</i>	<i>54.8</i>	<i>75.6</i>	<i>52.3</i>	<i>68.2</i>
DRR Index (0-100)	83.6	77.3	46.6	59.6	59.8	67.4	56.4	75.7
<i>Contribution of the NA projects to the DRR Index (0-100)</i>	<i>72.9</i>	<i>61.2</i>	<i>35.8</i>	<i>49.6</i>	<i>49.2</i>	<i>64.5</i>	<i>45.5</i>	<i>62.1</i>
Ratio	1.15	1.26	1.30	1.20	1.22	1.04	1.24	1.22

Table 5. Neighborhood Approach Projects – Disaster Risk Governance Index

Disaster Risk Governance Index	Peru	Peru	Peru	Colombia	Guatemala	Haiti	Jamaica	Honduras
City	Carabayllo	Independencia	Rimac	Medellin	Mixco	Port-de-Paix	Portmore	Tegucigalpa
1- Community Associativity	29.6	25.0	38.6	20.5	17.1	26.2	22.7	11.4
2- Community Involvement	55.0	57.5	52.5	64.5	67.5	40.0	42.5	70.0
3- Local Government Involvement	62.5	42.5	42.5	69.5	67.0	25.5	39.5	68.5
Disaster Risk Governance Index (0-100)	49.02	41.67	44.55	51.48	50.52	30.56	34.91	49.95

Table 6. Neighborhood Approach Projects – Social Cohesion Index

Social Cohesion Index	Peru	Peru	Peru	Colombia	Guatemala	Haiti	Jamaica	Honduras
City	Carabayllo	Independencia	Rimac	Medellin	Mixco	Port-de-Paix	Portmore	Tegucigalpa
1. Strong sense of belonging to this neighborhood	93.2	86.4	90.9	90.9	82.9	54.8	88.1	100.0
<i>Project contributed to it (Agree and strongly agree)</i>	<i>77.3</i>	<i>56.8</i>	<i>70.5</i>	<i>75.0</i>	<i>73.8</i>	<i>51.2</i>	<i>77.3</i>	<i>90.9</i>
2. Living here gives you a sense of community?	86.4	86.4	77.3	84.1	90.2	62.8	88.4	97.7
<i>Project contributed to it (Agree and strongly agree)</i>	<i>68.2</i>	<i>56.8</i>	<i>59.1</i>	<i>68.2</i>	<i>78.6</i>	<i>58.1</i>	<i>79.5</i>	<i>86.4</i>
3. Willingness to work together to improve your neighborhood	78.6	93.0	93.2	95.4	95.1	78.6	100.0	100.0
<i>Project contributed to it (Agree and strongly agree)</i>	<i>86.4</i>	<i>65.9</i>	<i>75.0</i>	<i>79.5</i>	<i>83.3</i>	<i>74.4</i>	<i>90.9</i>	<i>88.6</i>
4. Neighbors would help each other during an emergency	86.4	92.9	72.7	92.9	86.8	71.4	90.0	95.5
<i>Project contributed to it (Agree and strongly agree)</i>	<i>72.7</i>	<i>65.9</i>	<i>54.5</i>	<i>84.1</i>	<i>71.4</i>	<i>65.1</i>	<i>70.5</i>	<i>88.6</i>
Social Cohesion Index (0-100)	90.9	89.7	83.5	90.8	88.8	66.9	91.6	98.3
<i>Contribution of the NA projects to the Social Cohesion Index (0-100)</i>	<i>76.1</i>	<i>61.4</i>	<i>64.8</i>	<i>76.7</i>	<i>76.8</i>	<i>62.2</i>	<i>79.5</i>	<i>88.6</i>
Ratio	1.19	1.46	1.29	1.18	1.16	1.08	1.15	1.11

Using the previous three indices, we proceed to prepare a single Community Resilience Index which shows the current resilience capabilities in the different neighborhoods where the NA were implemented.

Table 7. Neighborhood Approach Projects – Social Resilience Index

Community Resilience Index	Peru	Peru	Peru	Colombia	Guatemala	Haiti	Jamaica	Honduras
City	Carabayllo	Independencia	Rimac	Medellin	Mixco	Port-de-Paix	Portmore	Tegucigalpa
DRR	83.6	77.3	46.6	59.6	59.8	67.4	56.4	75.7
Social Cohesion	90.9	89.7	83.5	90.8	88.8	66.9	91.6	98.3
Disaster Risk Governance	49.0	41.7	44.5	51.5	50.5	30.6	34.9	50.0
Community Resilience Index (0-100)	74.5	69.5	58.2	67.3	66.4	54.9	61.0	74.7

The following tables contain a selection of the most relevant findings from the analysis of each project. In the column 'Findings', common abbreviations are used to indicate the source of the information:

- FGD: Focus group conducted in the particular neighborhood
- Interviews: Interviews conducted with public officers, partners and project implementers
- Technical: Transect walk, physical inspections carried out by engineers and architects
- ER: Environmental resilience inspection where projects involve environmental interventions

A more comprehensive analysis of the survey findings, an exhaustive collection of research outputs and results is available in Annex 3.

Project Title: Resilient Urban Neighborhoods and Districts in Lima Norte

Implementing Partner (IP): Save the Children/US

Location: Lima-Carabayllo, Perú

Table 8. Main Interventions in the Lima-Carabayllo NA Project

	Output	Findings
Physical Works & Maintenance	<ul style="list-style-type: none"> • 12 community centers with seismic design and 5 small markets • 6 'tambos' or depots, also called 'advanced warehouses' <p>Transferred to : Carabayllo Municipality; community leaders; and INDECI</p>	<ul style="list-style-type: none"> • Works built by professionals and community members [Technical]. • Good earthquake resistance, followed construction standards and applied a correct selection and use of materials [Technical]. • The structures do not require short-term maintenance [Technical]. • There are some issues: still vulnerable to strong shocks, long-term maintenance (2 years) not arranged, some columns are not attached to the bases/foundation [Technical]. • Physical interventions have worked as 'catalyzer' for social mobilization and cohesion [Interviews]. • Community boards signed an agreement to maintain the physical works. During trainings they were taught how to do this [FGD].
Social Mobilization Gains	<p>[Not declared by implementer] Transferred to : Community</p>	<ul style="list-style-type: none"> • Authorities assert that communities were empowered and mobilized [interviews]: Evidence shows that higher individual than collective mobilization [FGD]. • Forming community platforms [FGD]. • Participation of community members in construction of the physical works has strengthened their knowledge, experience, appropriation and replication [FGD]. • Ownership is strengthened by physical works that facilitate daily live activities (e.g. stairs and railings) [FDG].
Environmental Improvements	<ul style="list-style-type: none"> • Forestation (2 implemented projects) • Forestation ("Iniciative" project) + Irrigation system • Green area or park in "tambos" <p>Transferred to : Community leaders and neighbors</p>	<ul style="list-style-type: none"> • After project closed out, one forestation has noautomatic irrigation system. The other forestation site has also lost trees. Both areas are marginally functional (50% effectiveness for DRR) [Technical]. • 'Slightly effective' as barrier to prevent landslides [Technical]. • Effective type of vegetation, marginal use of water [Technical].

	Output	Findings
Institutional Arrangements	[Not declared by implementer] Transferred to : Municipality	<ul style="list-style-type: none"> •High involvement of the municipality, especially related to the creation of the Civil Defense sub-department [Interviews]. •Participatory budgeting (previously installed) brought opportunities to better position DRR within the municipal agenda [Interviews]. •DRR investments reflected in the annual municipal budget may be seen as evidence of institutional ownership and sustainability [Interviews].
Livelihoods and Financial Mechanisms	Livelihood assessment and opinion poll Transferred to : Stakeholders: business, municipality and universities	Not a strong emphasis on improving/impacting livelihoods [Interviews]
DRR Interventions	<ul style="list-style-type: none"> • Methodologies and instruments (plans) for DRR • 12 Emergency signs were designed for all neighborhoods Transferred to : Carabayllo Municipality; Communities	<ul style="list-style-type: none"> •Municipal personnel were trained in DRR, this accelerated some technical and managerial processes [Interviews] •Project mentioned that several risk studies were undertaken, however there is not evidence of how these impacted methodologies and plans for DRR [Interviews] •12 emergency signs were designed for all neighborhoods; these were transferred to community organizations [Interviews]. Some are for ‘wear and tear’ [ER]. •People make a household emergency plan and package [FGD]

Urban Informality/Precariousness Index

Based on the UN-Habitat definition of informal settlements, the informality/precarioussness index was designed, composed of three sub-indexes: Legal, Physical and Social (details in Table 3) and used it for the Carabayllo’s neighborhoods. The higher the numbers, the greater is the level of higher informality/precarioussness.

Carabayllo has an Informality/Precarioussness Index of 37.97, the third highest among the eight projects in this study. The legal realm represents the highest score, particularly in the areas of compliance with building regulations and land tenure. In the physical realm, the scores are driven by the high exposure to natural and human-induced hazards. The social realm shows some issues with access to social infrastructure and low levels of violence and illegal activities. Even though the NA project was intended to positively impact some of the variables here, the NA incidence in the final index is marginal (less than 1 unit). Other methodologies used in this study allow the capture of other project impacts.

Disaster Risk Reduction

Based on the recently adopted United Nations terminology, this study developed a particular DRR Index (details in Table 4) to measure the perceived DRR status in the neighborhood as well as the contribution of the NA project to this level.

Carabayllo obtained the highest score on the DRR Index among the eight projects analyzed, and the highest (by far) in terms of the contribution of the NA project to this level. Nevertheless, it is interesting to note that the EWS score is proportionally lower than the other five variables measured, a common trend among all the projects.

Social Cohesion

This study developed a Social Cohesion Index (details in Table 6) to measure the perceived social cohesion at the neighborhood level as well as the contribution of the NA project to this level. Carabayllo obtained the third highest Social Cohesion Index score among the eight projects analyzed and the fifth highest in terms of the contribution of the NA project to the level of social cohesion.

Disaster Risk Governance

Based on the UNISDR terminology, this study developed a Disaster Risk Governance Index (details in Table 5) to measure the Disaster Risk Governance associated to the particular NA project

Carabayllo obtained the fourth highest Risk Governance Index score among the eight projects analyzed. It registered second highest in Community Associativity, which means more than a quarter of the individuals interviewed belong to a community organization. Community involvement in the project was the fourth highest. Local Government was highly involved, even though it is the fourth highest among the eight projects.

Project Title: Risk Reduction in Vulnerable Areas of Independencia District, Lima Province

Implementing Partner (IP): PREDES

Location: Lima-Independencia, Perú

Table 9. Main Interventions in the Lima-Independencia NA Project

	Output	Findings
Physical Works & Maintenance	<ul style="list-style-type: none"> • Water tanks and irrigation system for forestation areas • Public areas: green spaces, handrails • Retaining walls • Access Roads • Drainage (rain water runoff) • House retrofitting <p>Transferred to : Municipality of Independencia; Neighborhood organizations; Households</p>	<ul style="list-style-type: none"> • Water tanks in good structural conditions, comply with technical specifications for construction process [Technical]. • Public areas are in good conditions and structural development. Designed were well executed by professionals in engineering and architecting [Technical]. • These structures are effective in reducing vulnerability and risks to disasters [Technical]. • Physical interventions have worked as ‘catalyzer’ for social mobilization and cohesion [Interviews].
Social Mobilization Gains	[Not declared by implementer]	<ul style="list-style-type: none"> • Thanks to the process of constructing physical works people engaged with project aims and DRR: physical works as catalyzer of social gains [FGD; Interviews]. • Identification of a positive feedback, a ‘snowball effect’, when good practices improve people’s conditions the replicability is assured [Interviews].
Environmental Improvements	<p>Forestation areas</p> <p>Transferred to : Municipality; Mancomunidad de Lima Norte (North-Metropolitan area administration)</p>	<ul style="list-style-type: none"> • Forestation areas are in good structural conditions; they comply with technical specifications for construction process [Technical]. • Risks (landslides, rock falling, etc.) will be reduced if there is adequate growth of the trees [Technical].

	Output	Findings
Institutional Arrangements	[Not declared by implementer] Transferred to : National and local authorities	<ul style="list-style-type: none"> • El Niño Costero affected the way in which authorities and communities view risks: a window of opportunity for DRR [Interviews]. • Implementers play a key role, opening a space for authorities to enter into communities that historically have been reluctant to cooperate [Interviews]. • Communities depend largely from the Municipality to sustain some interventions, such as the water tanks [FGD]. • Participatory budgeting became as a governance mechanism: but it requires a base to encourage DRR [Interviews].
DRR Interventions	<ul style="list-style-type: none"> • DRM plans, municipal and community levels • Forestation for reducing risks Transferred to : Municipality; Mancomunidad de Lima Norte	<ul style="list-style-type: none"> • Communities are more aware about risks and vulnerabilities [FGD]. • See Forestation in ‘What’ section above.

Urban Informality/Precariousness

Independencia has an Informality/Precariousness Index of 30.18 (Table 3), the third lowest among the eight projects included in this study. The legal realm represents the highest scores, particularly in the areas of compliance with building regulations and urban planning, while land tenure is not a major issue. In the physical realm, scores are driven by the high exposure to natural and human-induced hazards and environmental degradation. The social realm shows some issues with access to social infrastructure and low levels of violence and illegal activities. Even though the NA project was intended to positively impact some of the variables here, the NA incidence in the final index is marginal (less than 1 unit). Other methodologies used in this study allow the capture of other project impacts.

Disaster Risk Reduction

Independencia obtained the second highest DRR Index score (details in Table 4) among the eight projects analyzed, and the fourth highest in terms of the contribution of the NA project to the level of DRR found. It is interesting to note that the community involved in the emergency plan implementation and the EWS are proportionally lower than the other four variables measured; those are common trends among all the projects.

Social Cohesion

Independencia obtained the fifth highest Social Cohesion Index score (details in Table 6) among the eight projects analyzed, and the lowest in terms of the contribution of the NA project to the level of social cohesion found.

Disaster Risk Governance

Independencia obtained the third lowest Disaster Risk Governance Index score (details in Table 5) among the eight projects analyzed. It registered the fourth highest Community Associativity, which means a quarter of the individuals interviewed belong to a community organization. The community was positively involved with NA project (the fourth highest) and continue working on this.

Project Title: Reinforcing Innovative Mechanisms for Arising Capacities in Disaster Risk Reduction in Rimac

Implementing Partner (IP): COOPI
 Location: Lima-Rimac, Perú

Table 10. Main Interventions in the Lima-Rimac NA Project

	Output	Findings
Physical Works & Maintenance	Irrigation system with residual water Transferred to : Municipality; Neighborhood organizations	<ul style="list-style-type: none"> In general, physical interventions were ‘Moderately Effective’ and are ‘Slightly Maintained’ [PW; ER]. Irrigation system: Wetland was not complicated to build and it does not require a high maintenance. The pump used inside the storage tank is automatic and does not require a person to manipulate it [PW; ER].
	Access roads (evacuation) Transferred to : Municipality; Neighborhood organizations	<ul style="list-style-type: none"> Stairs and handrails are in higher places or in places that are difficult to access, where people are in the highest risk condition. People use these points to meet or rest as they walk around. Some people or families benefited directly with the works, because their house entrances are in a better condition [Technical].
	Murals, tribune, bus stop, and park improvements Transferred to : Municipality; Neighborhood organizations	<ul style="list-style-type: none"> These works increase the quality of life of the users [Technical]. In Leticia, the recovery of residual areas in the community is moderately effective on reducing vulnerability, by protecting recreational areas that can be used at the same time as safe areas [ER].
	Shoring and ladder Transferred to : Municipality; Neighborhood organizations	<ul style="list-style-type: none"> The location of the columns (part of intervention) is not the most appropriate and is not in symmetry with the existing structural elements. Some of the wooden plates placed in the joints of the elements are damaged, including by the placement of the nails. Columns placed directly on the ground can start to have problems due to humidity and deterioration [Technical].
Social Mobilization Gains	<ul style="list-style-type: none"> Several training courses Empowerment of the recycling group Transferred to : Community	<ul style="list-style-type: none"> Communities are more aware of risks and vulnerability than before. People thank that they were trained in ‘public project management’: i.e. elaboration of proposals for municipal funds. These two element contribute to the sustainability of training interventions [FGD]. There is a ‘replicating factor’ or ‘snowball’ among people on the knowledge acquired during trainings [FGD; Interviews]. Participation in the construction of physical works benefited community ownership for such interventions: physical works as catalyzers [FGD; Interviews].
Environmental Improvements	Forestation areas Transferred to : Municipality; Neighborhood organizations	<ul style="list-style-type: none"> The implemented system has a good functionality and sustainability because there are people who contribute sewage water, the principal resource for the wetland and thus for the irrigation system [Technical]. Trees, desert shrubs and other superficial vegetation can retain small rocks. They also reduce soil erosion. However, the area does not constitute a high-risk area, since its slope is moderate [ER]. Due to the early stages of the forestation (22/2017) the protection factor is moderately effective.

Urban Informality/Precariousness

Rimac has an Informality/Precariousness Index of 33.88 (Table 3), the fifth highest among the eight projects included in this study. The legal realm represents the highest score, particularly in the areas of compliance with building regulations and urban planning, while land tenure is not a major issue. In the physical realm the scores are driven by the high exposure to natural and human induced hazards, and the environmental degradation; housing is in good condition. The social realm shows some levels of violence and illegal activities and some issues

with access to social infrastructure. Even though the NA project was intended to positively impact some of the variables here, the NA incidence in the final index is marginal (less than 1 unit). Other methodologies used in this study allow to capture other project impacts.

Disaster Risk Reduction

Rímac obtained the lowest DRR Index score (details in Table 4) among the eight projects analyzed and the lowest in terms of the contribution of the NA project to the level of DRR found. In addition, the community involved in the implementation of the emergency plan and the EWS is proportionally lower than the other four variables measured; these are common trends among all the projects.

Social Cohesion

Rímac obtained the third lowest Social Cohesion Index score (details in Table 6) among the eight projects analyzed, and the third lowest in terms of the contribution of the NA project to the level of social cohesion found.

Disaster Risk Governance

Rímac ranks fifth in the Disaster Risk Governance Index score (details in Table 5) among the eight projects analyzed. Nevertheless, it registered highest in Community Associativity, which means more than a third of the individuals interviewed belong to a community organization. Rímac is sixth in community involvement and sixth in local government involvement among the eight projects.

Project Title: Knowledge and Risk Reduction Program (CRRP)

Implementing Partner (IP): Global Communities

Location: Medellín, Colombia

Table 11. Main Interventions in the Medellin NA Project

	Outputs	Findings
Physical Works & Maintenance	<ul style="list-style-type: none"> Housing improvements: roofing Retaining walls <p>Transferred to : Community and benefited families</p> <ul style="list-style-type: none"> Drainage (rain water runoff) Access/ Evacuation roads <p>Transferred to : Municipality</p> <p>Street lighting (Solar off-grid)</p> <p>Transferred to : Fundación Litro de Luz and Community</p>	<ul style="list-style-type: none"> Houses are safer due to training, manuals and physical works [FGD]. Houses for improvements were carefully selected in a participatory way, which resulted in community members accepting the selection [FGD]. Sidewalks, stairs and railings have reduced the risk of falling. Previously people died or were seriously injured. They now can get to their destination safer and more easily [FGD]. Solar lighting was not installed in all the areas where it was needed, due to lack of time and money. During inspection, these lights were not working [FGD].
Social Mobilization Gains	[Not declared by implementer]	<ul style="list-style-type: none"> Community members learned their obligation (pay taxes) and rights (access to public works (PW) and property titles), and to demand support from municipality [FGD]. Community associations were strengthened and are recognized by the municipality [Interviews; FGD]. Participatory design has facilitate community ownership [Interviews]. Implementer has highlighted the social value of physical works, this has propitiated community ownership [Interviews].

	Outputs	Findings
Environmental Improvements	<ul style="list-style-type: none"> • Environmental gardens • Garbage disposal management Transferred to : Community and Fundación Salvaterra	<ul style="list-style-type: none"> • Environmental group cleans up, provides maintenance and monitors the state of physical works and natural areas in alliance with institutions through a signed agreement [FGD].
Institutional Arrangements	[Not declared by implementer]	<ul style="list-style-type: none"> • Private-public alliances may benefit/speed-up transition of local economic activities from informal to formal [Interviews]. • Private partners have seen the potential of informal settlements' small economies and helped to develop innovative ideas: concatenation of projects [Interviews]. • Municipality is investing strongly in these communities [FGD; Interviews]. • Support from many different institutions augments possibility of continuing projects with some of them: Municipality, UPB, DAGRED, Salvaterra, FENALCO, Police [FGD; Interviews].
Livelihoods and Financial Mechanisms	Public-private partnership for financial credit of small businesses Transferred to : Public and private organizations, and merchants	<ul style="list-style-type: none"> • Many micro business owners learned to assess risks, how to reduce them, how to stay safe and understood that risk management is their responsibility [FGD]. • Vegetable gardens provide an income and food security, which makes people maintain them [FGD].
DRR Interventions	<ul style="list-style-type: none"> • Emergency management protocol design for community EWS • Housing improvements: roofing • Retaining walls (see section Physical Works in this table) Transferred to : Community and benefited families	<ul style="list-style-type: none"> • Families have prepared their emergency plans [FGD]. • Families benefited from house improvements and retaining walls are safer than before. However, these specific and particular actions are not significant for a overall reduction of risks in the neighborhoods [FGD; Interviews].

Urban Informality/Precariousness

Medellin has an Informality/Precariousness Index of 29.32 (Table 3), the second lowest among the eight projects included in this study. The legal realm represents the highest score, particularly in the areas of compliance with urban planning and building regulations there are still issues in land tenure. In the physical realm, the scores are driven by the high exposure to natural and human-induced hazards, and environmental degradation; the housing is in good condition and access to basic utilities is not a major problem. The social realm shows some levels of violence and illegal activities and some issues with access to social infrastructure. Even though the NA project was intended to positively impact some of the variables here, the NA incidence in the final index is marginal (less than 1 unit). Other methodologies used in this study allow the capture of other project impacts.

Disaster Risk Reduction

Medellin obtained the third lowest DRR Index score (details in Table 4) among the eight projects analyzed, and the fifth highest in terms of the contribution of the NA project to the level of DRR found. In addition, community involved in the emergency plan implementation and the EWS are proportionally lower than the other four variables measured; these are common trends among all the projects.

Social Cohesion

Medellín obtained the fourth highest Social Cohesion Index score (details in Table 6) among the eight projects analyzed, and the fourth highest in terms of the contribution of the NA project to the level of social cohesion found.

Disaster Risk Governance

Medellín obtained the highest Disaster Risk Governance Index score (details in Table 5) among the eight projects analyzed. It registered the third lowest Community Associativity, which means a fifth of the individuals interviewed belong to a community organization. The community involvement is the third highest and local government had the highest involvement in the NA project among the eight projects analyzed, and continues working on this initiative in six additional neighborhoods.

Project Title: Barrio Mio

Implementing Partner (IP): Project Concern International

Location: Mixco, Guatemala

Table 12. Main Interventions in the Mixco NA Project

	Outputs	Findings
Physical Works & Maintenance	Tailored retaining walls Transferred to: Technology transferred to municipal teams	Appropriate maintenance by community members [Implementers]. The municipality will not receive the works until land titles are defined. [Interviews].
	<ul style="list-style-type: none"> • Drainage system • Permeable pavements Transferred to: Municipality of Mixco, through written agreement Rainwater collection system Transferred to: Municipality of Mixco and Neighborhood organization	Working properly. It is considered that the reduction of environmental vulnerability is well achieved by installing sewage and gray water systems that mitigate the disposal of pollutants to natural areas, as well as in the streets and other public and collective areas of the communities [ER]. <ul style="list-style-type: none"> • Structures are in good shape, but not enough maintenance: the community is not well organized to maintain clean the structures [Implementers]. • The rainwater collection system is an effective measure to address issues related to drinking water availability, reducing vulnerability and so reducing risks. [ER].
	Septic tanks: Residual water treatment plan (PTAR) Transferred to : Municipality of Mixco and Neighborhood organization	<ul style="list-style-type: none"> • Working well but some neighbors still unconnected to the plan because of miscommunication with local authorities [Implementers]. • The treatment plants are effective in mitigating pollution both in natural areas (in the ravines) and public spaces, as well as in reducing disease caused by the presence of surface pollutants in the communities. However, in Cipresales some families have not made their gray water connection and in some cases, the water stagnates, thus generating the appearance of mosquitoes and related health problems [ER]. • The assessment found that there are no lab tests to check the Tank's performance and there are no operational manuals. The implementer is working on this issue.
House retrofitting Transferred to : Benefited families	The reinforcement made for structural elements comply with seismic-resistant standards. Blocks and reinforced concrete were used. In construction plans, it was possible to observe the design and dimensioning of the elements. The upper floor is made with horizontal joists and blocks on which the concrete slab is placed. A good finish of the elements and a correct construction technique are observed. The walls have a plaster finish. The work done increases the safety against collapse of the built structures, as long as the weight is not increased or subjected to loads greater than those it was designed for.	

	Outputs	Findings
	Community center in Cipresales Transferred to : Community organization	A one-story building used by the different communal groups. The structural section was built using PVC pipes as columns and beam. The structure is very light and does not transmit significant loads to the ground, and therefore, to the walls. We cannot determine whether the structure will be stable in seismic conditions. A little flexion was observed in the horizontal elements.
	Access roads Transferred to : Municipality of Mixco and Community organization	Sidewalks, stairs and accesses built with reinforced concrete. They were mostly placed on slopes. Also, in some points, small walls were built for the safety and integrity of the work. They are rigid structures, safe and of good dimension.
Social Mobilization Gains	<ul style="list-style-type: none"> • Facilitating neighborhood committee (COCODE) • Empowered Women program • Transferred to : Community organizations 	See Livelihoods and Financial Mechanisms.
Environmental Improvements	[Not declared by implementer]	Forestation areas generated during the project are in good condition, they protect the area from erosion. However, there are also areas of clandestine garbage and construction rubble dumping and burning near areas sensitive to erosion [ER].
Institutional Arrangements	[Not declared by implementer]	<ul style="list-style-type: none"> • NA approach for private sector may be interesting, but it needs to be aligned with market opportunities [Interviews]. • Implementers not only enable municipality to enter to communities, but also the private actor (market) [Interviews]. • Physical works as catalysts for the relationship between the municipality and the community: corruption acts in an opposite way [Interviews]. • Neighborhood organizations can establish direct agreements with private companies [Interviews]. • There is lack of presence of the government in the neighborhoods: implementers and NA approach has helped to bridge that gap [Interviews]. • Implementers/donors (when they are trusted organizations by governments) may help state organization to create trusted relations with other state or non-state institutions [Interviews].
Livelihoods and Financial Mechanisms	Women network for entrepreneurship Transferred to : Community	<ul style="list-style-type: none"> • Role of women in implementing interventions: they were always present and willing to contribute [Interviews]. • Importance of women as part of the workforce to improve family economies [Interviews].

Urban Informality/Precariousness

Mixco has an Informality/Precariousness Index score of 25.90 (Table 3), the lowest among the eight projects included in this study. The legal realm shows issues in the areas of compliance with urban planning and land tenure, and less problems related to building regulations. In the physical realm, scores are driven by the high exposure to natural and human-induced hazards, and environmental degradation, while the housing conditions are less problematic and access to basic utilities is not a problem. The social realm shows issues with access to social infrastructure. Even though the NA project was intended to positively impact some of the variables here, the NA incidence in the final index is marginal (less than 1 unit). Other methodologies used in this study allow the capture of other project impacts.

Disaster Risk Reduction

Mixco obtained the fifth highest DRR Index score (details in Table 4) among the eight projects analyzed, and the third lowest in terms of the contribution of the NA project to the level of DRR found. In addition, the

community involved in the implementation of the emergency plan and the EWS is proportionally lower than the other four variables measured; these are common trends among all the projects.

Social Cohesion

Mixco obtained the second lowest Social Cohesion Index score (details in Table 6) among the eight projects analyzed, and the third highest in terms of the contribution of the NA project to the level of social cohesion found.

Disaster Risk Governance

Mixco obtained the second highest Disaster Risk Governance Index score (details in Table 5) among the eight projects analyzed. It registered the second lowest Community Associativity, which means less than a fifth of the individuals interviewed belong to a community organization. To the contrary, community involvement registered the second highest score among the eight projects. The local government involvement had ups and downs, but recently was highly involved, and the relationship with the association of municipalities (mancommunity) that adopted the NA was reinforced.

Project Title: Community Initiatives in Disaster Risk Reduction (CIDRR)

Implementing Partner (IP): World Concern Development Organization

Location: Port-de-Paix and Anse-à-Foleur, Haiti

Table 13. Main Interventions in the Port-de-Paix and Anse-à-Foleur NA Project

	Outputs	Findings
Physical Works & Maintenance	<p>Shelter improvements (WASH, roofing)</p> <p>Transferred to : Churches, schools, and CDGRD-NO, through written agreements</p> <ul style="list-style-type: none"> • Drainage canals • Gabions <p>Transferred to : MTPTC and Neighborhood committees through verbal agreement</p> <p>Water supply (pipe that runs)</p> <p>Transferred to : MTP DINEPA through written agreement</p>	<p>Shelters were extremely effective interventions in Port-de-Paix and Anse-à-Foleur: they were extensively used during Hurricane Irma (2017) and no electricity shortage was reported [FGD].</p> <ul style="list-style-type: none"> • Canals were critical during Hurricane Irma. Decline of flood events since their construction. Nevertheless, most of them are filled with garbage and mud, so better waste management may improve their performance substantially. • Some people have fallen down, as the canals lack of handrails. [FGD]. <p>The project provided an excellent quality pipeline from the source of the water to the town. The World Bank built 10 water tanks and the municipality built the distribution network. An excellent effect of concatenation of projects [Interviews].</p>
Social Mobilization Gains	<p>Youth volunteers trained for EWS/DRR: including a siren crank by community</p> <p>Transferred to : CPC and CDGRD-NO</p>	<ul style="list-style-type: none"> • Not all communities developed ownership with regards to their physical works (FGD). • Hiring locals enhances community participation, awareness, and neighbors' appreciation on the interventions [Interviews].
Environmental Improvements	<p>Canal and coastal clean-out, and garbage disposal</p> <p>Transferred to : MTPTC, Municipality, and Neighborhood committees through verbal agreement</p>	<p>Garbage disposal was not an effective intervention. Cans were removed and/or vandalized, and garbage were not collected by the municipality [FGD].</p>

	Outputs	Findings
Institutional Arrangements	[Not declared by implementer]	<ul style="list-style-type: none"> • Institutional ownership is lacking. Municipality is not picking up the trash deposited in the trash cans or in other areas. When it rains the trash floods into the canal; also people throw trash in the canal. There is however some civil society organizations that support the sustainability of the works (e.g. Bon vive maintaining the canals with young male community members) [FGD]. • Communities appreciate the role of implementers, over even the municipality and other public organizations [Interviews]. • NA approach enabled a ‘concatenation’ of interventions built from previous works: canals [Interviews].
DRR Interventions	Shelter (and other) improvements (WASH, roofing) Transferred to : Churches, schools, and CDGRD-NO, through written agreements	<ul style="list-style-type: none"> • Shelters operated efficiently during Hurricane Irma (2017). • Protection Civil provided good logistical support during Hurricane Irma (2017). [FGD]. • People feel that they have learned how to react during emergencies: siren crank manager recognizes importance of being ready in case of emergencies (as he did during Hurricane Irma) [FGD]. • Institutions recognize that canals, gabions and shelters worked well during Hurricane Irma [Interviews].

Urban Informality/Precariousness

Port-de-Paix and Anse-à-Foleur have a combined Informality/Precariousness Index score of 52.41 (Table 3), the highest (by far) among the eight projects included in this study. The legal realm shows serious issues in the areas of compliance with urban planning and land tenure and building regulations, and also important deficiencies with land tenure. In the physical realm, the scores are driven by the high exposure to natural and human-induced hazards, lack of access to basic utilities and environmental degradation, while the housing conditions are much less problematic. The social realm shows issues with access to social infrastructure, violence and illegal activities, and some level of marginalization issues. Even though the NA project was intended to positively impact some of the variables here, the NA incidence in the final index is marginal (less than 1 unit). Other methodologies used in this study allow the capture of other project impacts.

Disaster Risk Reduction

Port-de-Paix and Anse-à-Foleur obtained the fourth highest DRR Index score (details in Table 4) among the eight projects analyzed, and the second highest in terms of the contribution of the NA project to the level of DRR found. Compared to the other NA projects, the scores in the DRR Index related to the Haitian community’s involvement in the implementation of the emergency plan and the EWS are similar to the other four variables measured. It is interesting to note the importance that the community attributes to the project’s physical works built and their involvement in their maintenance.

Social Cohesion

Port-de-Paix and Anse-à-Foleur obtained the lowest Social Cohesion Index score (details in Table 6) among the eight projects analyzed, and the second lowest in terms of the contribution of the NA project to the level of social cohesion found.

Disaster Risk Governance

Port-de-Paix and Anse-à-Foleur obtained by far the lowest Disaster Risk Governance Index score (details in Table 5) among the eight projects analyzed. Nevertheless, it registered the third highest in Community Associativity, which means more than a quarter of the individuals interviewed belong to a community

organization. The community involvement in the NA was mediated by the cash-for-work formula and the local government involvement in the NA was by far the lower in the eight projects.

Project Title: Building Resilience and Capacities for Emerging Disasters (BRACED)

Implementing Partner (IP): Habitat for Humanity

Location: Portmore, Jamaica

Table 14. Main Interventions in the Portmore NA Project

	Outputs	Findings
Physical Works & Maintenance	<p>Housing improvements: retrofitting and roofing Transferred to : Community members, families</p> <p>Ventilated Improved Dry Pits (VIDPs) Transferred to : Community households and Sanitation committees</p>	<p>Interventions have helped to reduce problems with heavy storms in 2017 [FGD].</p> <ul style="list-style-type: none"> •Reduction of environmental vulnerability is moderately achieved by installing the sanitation modules inside the communities. This mitigates the disposal of pollutants (fecal matter) in case of potential flooding in streets and collective areas of the communities. It also reduces potential contamination to water source [ER]. •VIDPs demonstrated that they are effective in reduction of health risks. During the visit, it was observed that the modules have been adopted by the members of the community, which translates into a lower risk of diseases caused by fecal matter that were previously superficial and close to all homes [ER]. •It was observed that the VIDPs are well maintained. And at the level of management and sustainability of the interventions, it is considered that since a limited number of families have access to each bathroom (between 4 and 5 families), it is expected that their maintenance will be easier to coordinate among family members. The use of a double dry tank system for the VIDP's helps to facilitate long-term maintenance [ER].
Social Mobilization Gains	<p>CERT trainings Transferred to : Social development commission - PMC</p>	<ul style="list-style-type: none"> •Construction skills training for youth (mostly men) with certification gave them (temporary) jobs [FGD].
Environmental Improvements	<p>Garbage receptacles Transferred to : Neighborhood Committees: NSWMA</p>	<ul style="list-style-type: none"> •Receptacles in Naggos Head and Gregory Park have helped to reduce health risks and prevent contamination in natural areas [ER]. In addition, garbage in open areas interrupt the raining runoff, increasing the risk of flooding during the rainy season. •The receptacles for waste management are effective in reducing informal or clandestine dumps in open areas. Because of the height of these infrastructures, it is less possible that dogs or goats try to look for food waste. Some neighbors report that the garbage collection is irregular and that also affects its functionality in relation to preventing garbage from being exposed [ER]. •The receptacles are robust infrastructure that requires very little maintenance [ER]. •Construction of receptacles helped to reduce the risk of inundations as garbage used to block drainages. And in case of inundations there is less garbage floating into the houses [FGD].

	Outputs	Findings
Institutional Arrangements	Land tenure mapping and regularization Transferred to : National Land Agency, LAMP, NSWMA and Naggos Head Citizen's Association	<ul style="list-style-type: none"> • Local government incorporated new methods for land management as experience from the project: this may result in future replication [Interviews]. • Land tenureship augmented willingness to make improvements and helps to attain wealth: and pay taxes and demand public services [FGD]. • Implementer has helped in rendering more visible the informal settlements to local authorities and national government [Interviews]. • Implementer has demonstrated how to speed up processes of land-tenure by supporting people with knowledge, data and financial resources [Interviews]. • Community awareness and mobilization have facilitated land-tenure surveying [Interviews].
	Maps of Naggos Head Transferred to : Portmore Municipal Council - Planning Division	<ul style="list-style-type: none"> • Neighbors learned about map reading and evacuation routes [FGD]. • Doing a survey / mapping to define levels of risk helps to get everybody to agree on location of physical works [FGD].

Urban Informality/Precariousness

Portmore has a combined Informality/Precariousness Index score of 38.48 (Table 3), the second highest among the eight projects included in this study. The legal realm shows serious issues with land tenure and compliance with building regulations and urban planning. In the physical realm, the scores are driven by the high exposure to natural and human-induced hazards, environmental degradation, and access to basic utilities. The social realm shows issues with violence and illegal activities, and access to social infrastructure. Marginalization is not a major issue. In the case of Portmore, some of the interventions are still in an implementation phase. Those related to land tenure will be completed in 10-12 months, and they would have a moderate positive incidence in the final index, 2-3 units. Other methodologies used in this study allow the capture of additional project impacts.

Disaster Risk Reduction

Portmore obtained the second lowest DRR Index score (details in Table 4) among the eight projects analyzed and the second lowest in terms of the contribution of the NA project to the level of DRR found. It is interesting to note that the EWS is proportionally lower than the other five variables measured, a common trend among all the projects; it is also the lowest EWS score among the eight projects.

Social Cohesion

Portmore obtained the second highest (by far) Social Cohesion Index score (details in Table 6) among the eight projects analyzed, and the second highest (by far) in terms of the contribution of the NA project to the level of social cohesion found.

Disaster Risk Governance

Portmore is the second lowest in Disaster Risk Governance Index score (details in Table 5) among the eight projects analyzed. It registered in the fifth position with regard to the Community Associativity, which means less than a four of the individuals interviewed belong to a community organization. Community involvement is the second lowest and local government involvement in the NA project is very low, second lowest among the eight projects.

Project Title: Operationalizing a Neighborhood Approach to Reduce Urban Disaster Risk in Latin America and the Caribbean

Implementing Partner (IP): GOAL

Location: Tegucigalpa, Honduras

Table 15 Main Interventions in the Tegucigalpa NA Project

	Outputs	Findings
Physical Works & Maintenance	Drainage systems Transferred to : Committees of Water Management, Neighborhood organizations (Patronatos), and CODEL	<ul style="list-style-type: none"> • Gray and rainwater drainage with ditches is effective to reduce potential flooding in the communities. Moreover, it mitigates soil erosion produced by superficial runoff water to natural areas. This helps to protect the streams, mainly by conducting the discharges to lower areas and by using trenches to reduce water flow speed [ER]. • The ditches for rainwater runoff and domestic gray water management are in good condition [ER]. • It is important to mention that the risk areas in the communities are well monitored, both by the community (with measuring instruments for rain, fissures in walls, inclination of sensitive areas) as well as by a new project with the World Bank, who gave financing to locate 16 drill points with an early alteration system [ER]. • Committees pay a plumber to conduct maintenance and repairs of the system [Implementer]. • The system works well, although some maintenance issues were raised: collection trucks cannot access some areas [Implementer].
	Housing improvements and new houses (relocation) Transferred to : Households/families	<ul style="list-style-type: none"> • Three years after improvements, 36 of 47 show to be in good condition. 39 of 47 households have conducted maintenance regularly. 14 of 47 have made new improvements. Seven additional households, non-related to the project, have initiated improvements to their houses, based in the project [Implementers].
	Gabions Transferred to : Community organization	<ul style="list-style-type: none"> • Gabions were built in the relocation area. Even though there are some technical issues, with acceptable specifications and an estimated life of 20 years. There are some observations regarding the size of the stones, as well as the quality of the wire that tightens-up the metal mesh.
	WASH drinking water systems Transferred to : Director of Educational Centers, CODEL, and Parents organizations	<ul style="list-style-type: none"> • The implementation of sanitation modules is very effective. It mitigates superficial contamination in the communities by providing an effective solution to the lack of municipal sewage collectors in most parts of Duarte and Ulloa communities. Also, it controls ground pollution, thus improving people’s health. Some modules had an improvised harvesting rainwater system, which gives an alternative solution for water consumption for domestic use (as no potable water is needed) [ER]. • Families maintain regularly their sanitation systems [ER; Implementers].
Social Mobilization Gains	[Not declared by implementer]	<ul style="list-style-type: none"> • Social control (auditoria social) mechanisms are an opportunity to people to have voice in decision making and for empowerment [Interviews].
Institutional Arrangements	<ul style="list-style-type: none"> • Household relocation • GIS outputs Transferred to : Households/families and diverse public institutions	<ul style="list-style-type: none"> • NA for EWS is being replicated by national institutions (COPECO) [Interviews]. • 8 of 9 constructed houses are being well maintained by families [Implementers]. • Technical studies of hazards have been delivered to different local and national institutions, some of them are informing decisions regarding to mitigation measures and future relocations [Implementers].
Livelihoods and Financial Mechanisms	Grocery stores (pulperías) network and the savings strategy Transferred to : Merchants network organized in a cooperative saving and credit entity	<ul style="list-style-type: none"> • Many grocery stores have incremented their stock and have done improvements to their infrastructure [Implementers]. • 17 of 21 members have maintained their businesses after a year [Implementers]. • A system of basic baskets is being working within the stores.

	Outputs	Findings
DRR Interventions	Early warning systems (SAT) Transferred to : CODEM and CODEL	• Two of three CODELs maintain an operative EWS. Main limitations are: reliable communication and a massive broadcasting system for warnings [Implementers].

Note: There are two interventions that were not reported within the Project Transfer Matrix submitted by the implementers: the Resilience Analysis for Social Systems (R4S); and the Analysis of the Resilience of Communities to Disasters (ARC-D) Toolkit. More information about these interventions can be found in Annexes.

Urban Informality/Precariousness

Tegucigalpa has a combined Informality/Precariousness Index score of 35.88 (Table 3), the fourth highest among the eight projects included in this study. The legal realm shows serious issues with compliance with building regulations and urban planning, and also problems with land tenure. In the physical realm, the scores are driven by the high exposure to natural and human-induced hazards and environmental degradation. The social realm shows issues with access to social infrastructure and violence and illegal activities. Marginalization is not a major issue. In the case of Tegucigalpa, an intervention related to community relocation due to existing disaster risk is still in an implementation phase. This intervention is related to land tenure, urban planning and building regulations and will be completed in the next four months; it will have a moderate positive incidence in the final index, 3-4 units. Other methodologies used in this study allow to capture additional project impacts.

Disaster Risk Reduction

Tegucigalpa obtained the third highest DRR Index score (details in Table 4) among the eight projects analyzed, and the third highest in terms of the contribution of the NA project to the level of DRR found. In comparison with other NA projects, community involvement in Tegucigalpa in the implementation of the emergency plan and the EWS has closer scores to the other four variables measured.

Social Cohesion

Tegucigalpa obtained the highest Social Cohesion Index score (details in Table 6) among the eight projects analyzed, and the highest in terms of the contribution of the NA project to the level of social cohesion found.

Disaster Risk Governance

Tegucigalpa obtained the third highest Disaster Risk Governance Index score (details in Table 5) among the eight projects analyzed. It is interesting that this NA project registered the lowest in Community Associativity, which means only a tenth of the individuals interviewed belong to a community organization. Community involvement registered the highest score and local government involvement had the second highest score among the eight projects.

6. Response to the USAID Questions

The following premises are essential to answering the questions posed by USAID: 1) The eight projects evaluated share NA characteristics such as a geographical approach and a participatory action process; they address specific sectors, and aim to reduce risk and build resilience of the target communities; 2) However, each project is unique, responding to the communities' needs, their distinct socio-economic and cultural features, and is framed in specific realities and contexts; and 3) the answers to the USAID questions will refer, in some cases, to common NA characteristics, and in other cases, to strategies, methods and techniques used by some of the implementers, which enriched, complemented and even came to guide the NA.

6.1 Objective 1: Effectiveness

1. To what extent have projects implemented under a Neighborhood Approach contributed to reducing community disaster hazard risks in targeted urban communities in the selected projects?

To answer this question one must return to the proposed conceptual framework, specify the areas where the construction of risk (the social construction of exposure and vulnerability) must be tackled, and identify the NA interventions in each area that have proven to be appropriate and sufficiently implemented.

The four trajectories or pathways of influence to reduce community disaster risk are: a) secure land occupation; b) sufficient and resilient livelihoods; c) robust and resilient ecosystems; and d) adequate disaster risk and emergency management. As indicated earlier, in communities suffering from significant levels of precariousness, it is critical to first address the basic and survival needs that influence all the other domains.

a) NA interventions and features associated with secure land occupation

Two main interventions illustrate a successful approach to secure land occupation: 1) Land tenure initiative implemented in Portmore, Jamaica, with support from Habitat for Humanity (HfH), and 2) Relocating of at-risk communities in Tegucigalpa, Honduras, with support from GOAL. The former is being implemented in the community of Naggo-Head in Portmore as a pilot activity by the HfH and Jamaica's Land Administration and Management Program. This initiative helps communities exposed to disaster risk acquire a registered title. Empirically, there is a positive link between land registration and access to credit, housing improvement, and risk reduction. Nevertheless, there is not enough evidence that obtaining property titles alone will address the issue of access to credit, and even more, reduce risk (Domeher & Abdulai, 2011). What is clear and can be stated with confidence is that land tenure issues and exposure to natural hazards may result in an exclusion of aid distribution and post-disaster reconstruction programs, making these communities more vulnerable to future disasters. Secure land tenure is critical to assure restoration of shelter and livelihoods and to reduce the risks of precariousness in communities (Caron et al., 2015), as observed in the 2010 earthquake in Haiti (Desir & Jackson, 2012; Jahn et al. 2017), the 2004 tsunami in Sri Lanka (Boano, 2009), and the 2013 Typhoon Haiyan in Philippines (Oxfam, 2014).

The relocation of at-risk communities in Tegucigalpa's Berlin neighborhood by GOAL is currently in the implementation phase after several months of delay due to the extensive paperwork required to fulfill environmental standards and secure land tenure for the beneficiaries in the new location. The complex process involved multiple actors such as the Municipality, the national housing authority, the water authority, universities, and a private engineering and geologist consultancy firm, among others. The initiative included a detailed hazard assessment in both the original location and receiving territory, a socio-economic and resilience study, and a carefully designed participatory process. The local government and GOAL joined efforts to ensure an effective and efficient process, keeping the relocating community together in the selected destination, and ensuring that the at-risk lots remain unoccupied through reforestation and community surveillance/control.

b) Sufficient and resilient livelihoods

Two main NA initiatives can illustrate effective DRR: 1) the small business approach used by Global Communities in Medellín, Colombia; and 2) the pulperias networks implemented by GOAL in Tegucigalpa, Honduras.

c) Robust and resilient ecosystems

In Lima, Perú, three different NA projects implemented an afforestation project, initially designed to reduce the risk of rocks falling from the slopes and to recover the fragile ecosystem lost over the past decades. The project, initially designed by PREDES, was later replicated by the other two implementers, COOPI and Save the Children. However, the endeavor grew in magnitude, in both geographical size and scope, achieving the status of a timely and a much-relevant intervention for the neighborhood, given its geographical and environmental context.

The afforestation project then became an effort, by the city of Lima, to limit the expansion of informal settlements in its surrounding hills with high slopes, which are susceptible to landslides and earthquakes.

The initiative integrates different components that demand locally available technical capabilities: 1) a subsystem of gray water collection and treatment; 2) a pumping, storage and irrigation subsystem; 3) the selection and sowing of native trees; 4) the use of synthetic materials (hydrogel) that retain moisture in the soil for prolonged periods; and 5) most importantly, involvement of the surrounding communities to develop and maintain this initiative.

This strategy obeys the theoretical model proposed by the implementers and supported by local forestry technicians, but lacks evidence as to its effectiveness and the long-term impacts of some of the materials used (hydrogel), including the extensive use of gray water (e.g., physical-chemical or bacteriological controls of the water used in irrigation have not been carried out).

d) Adequate disaster risk and emergency management

Physical works such as pathways, access roads, retaining walls and drainage systems are the axes of risk reduction in neighborhood projects. Since these settlements usually lack most of the urban amenities, the NA projects contributed to ease some essential basic infrastructure, which is directly associated with reducing vulnerability and disaster risk.

The pathways were common to the six projects implemented in Central and South America due to the location of settlements on steep slopes. This infrastructure offers appropriate conditions for carrying out a safe evacuation in case of an emergency, reducing time, accidents, and allowing a rapid and safe evacuation of people with disabilities. Additionally, this is one of the interventions with the greatest impact on the quality of life of the members of the community, an externality that can benefit the community on a day-to-day basis.

Another physical work of great importance is the retaining wall, designed and built in a variety of shapes and sizes to protect against landslides. The smaller-sized walls accompany and protect the pathways and access roads, while the larger walls protect individual homes or even a set of dwellings, sewage treatment tanks, and other vital structures.

Infrastructure such as channels to manage the runoff in Port-de-Paix, as well as gabions in Anse-à-Foleur, were built by World Concern in Haiti, and proved to be highly effective during the passage of Hurricane

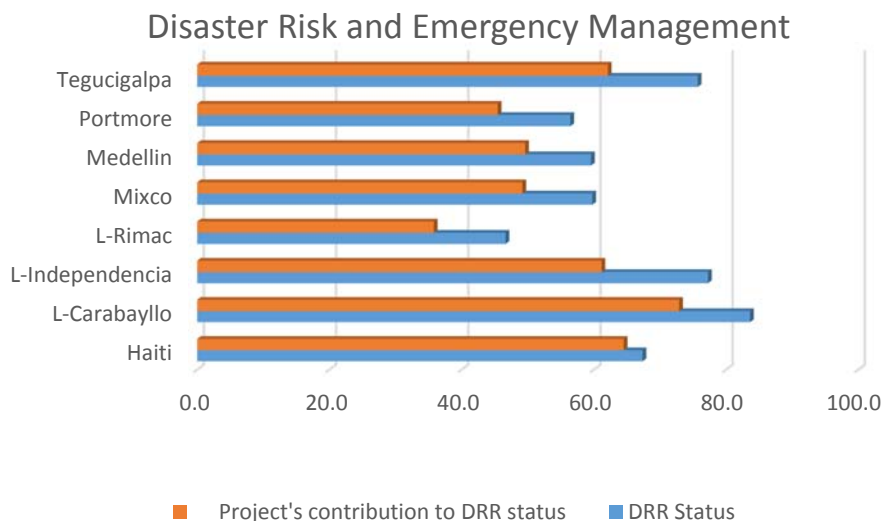
Irma in 2017. The works reduced the intensity of the 2017 impact and the duration of the emergency, especially in comparison to previous events such as Tropical Storm Joanne in September 2004. In addition, the community was provided with a hand crank alarm siren, and community training and improvements were made to the shelters provided by Civil Protection. These measures allowed for an early and safe evacuation to the shelters and a restoration of activities in less than 72 hours after the passage of Hurricane Irma.

Drainage systems are recorded in different magnitudes, from small works associated with the pathways and retaining walls—the most common in the projects in Lima, Medellin, Guatemala and Honduras—to more complex systems such as the one seen in the Tegucigalpa project, whose design demanded digital elevation mapping, generated with LIDAR (a detection system that works on the principle of radar, but uses light from a laser), a runoff, modeling and the generation of multiple scenarios to ensure a lifespan of 20-30 years. The issue of drainage is considered an essential DRR intervention, associated with the problem of managing rain and storm water, landslides and slope instability, particularly in urban settings.

The officials from institutions responsible for emergency management, private organizations and the private sector acknowledged a significant contribution of the NA to DRR in the eight projects when interviewed. However, with no system in place to measure DRR progress in general, they could not quantify the DRR advances contributed by the NA projects.

In the surveys directed to the community present in the selected neighborhoods, the study measured the progress and attribution of the NA to DRR.

Figure 4. Project’s contribution to community Disaster Risk and Emergency Management



We built an attribution index relating to the community’s perception of their current neighborhood’s DRR status and of the NA project’s contribution toward it. An index of 1 means that the surveyed population attributes the DRR advances 100% to the NA project. This is an inverse relationship; numbers greater than 1 mean that the attribution to the project is lower.

Table 16. Ratio project’s contribution to DRR status

Haiti	Carabayllo	Independencia	Rimac	Mixco	Medellin	Portmore	Tegucigalpa
1.04	1.15	1.26	1.30	1.22	1.20	1.24	1.22

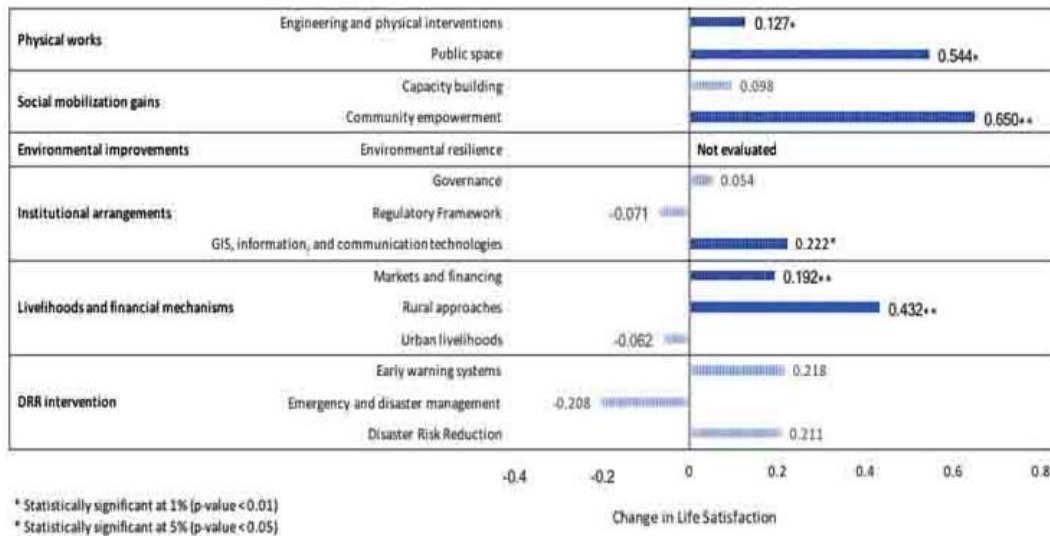
As can be seen, the community attribution of DRR advances in the NA Project is very high in Haiti, followed by the communities of Carabayllo in Lima, Medellín, Tegucigalpa and Mixco. The lowest values correspond to the community of Rímac, Lima.

2. Which aspects of the urban DRR Neighborhood Approach are most effective? Which aspects of the urban DRR Neighborhood Approach are least effective?

To address this question, we used two different approaches: 1) Life Satisfaction Analysis (LSA), and 2) Cost-Benefit Analysis (CBA). Using these two approaches allowed us to measure different NA project dimensions, the former measuring the level of well-being attributed to the NA projects’ interventions and the latter focusing on calculating and comparing benefits and costs of the specific NA interventions selected.

For the LSA, we used a multivariate regression analysis to evaluate the association between each of the 14 neighborhood DRR interventions and changes in life satisfaction (more details in Annex 4-8). Figure 5 presents the results of our estimation for all interventions grouped by categories. The categories with the highest impact on life satisfaction improvement are physical works and social mobilization gains. Neighborhoods that received a community empowerment intervention (social mobilization category) increased their life satisfaction by 0.65 points. Considering that on average, the life satisfaction of all neighborhoods in the study was 2.46, the community empowerment intervention produced an increase in life satisfaction of nearly 27%.

Figure 5. Impact of Interventions on Life Satisfaction



Other categories with interventions that had a significant impact on life satisfaction are livelihoods and financial mechanisms (rural approaches intervention and markets and financing), and institutional arrangements (GIS, information and communication technologies intervention). While in most cases the interventions were implemented in several neighborhoods, the rural approach case with the positive impact corresponds only to the Medellín neighborhood so, a generalization of this case should be taken with caution.

Other interventions such as capacity building, governance, regulatory framework, urban livelihoods, early warning systems, emergency/disaster management and disaster risk reduction were not statistically associated to changes in life satisfaction.

The CBA of the DRR interventions revealed that overall, the USAID project interventions have benefit-cost ratios (BCRs) of more than one, with the access paths being the most cost-beneficial. A BCR of one indicates that the discounted benefit of implementing an intervention equals its cost. The BCR of physical interventions such as access paths ranged from 6.48 in Rímac to 8.5 in Medellín. On using an average value of statistical life (\$107,000 for lower income countries, Viscusi & Masterman, 2017), the BCR for access paths increases to 138 and 122, for Medellín and Rímac, respectively. The drainage canal in Port-de-Paix, Haiti, yielded a BCR of 13.19, valued for benefits from avoided loss of household assets and increase in productive business days. Sanitation interventions like the septic tank in Mixco obtained a BCR of 1.62. The analyses were performed using conservative estimates and a discount rate of 10%. The life span for most cases was taken as 10 years considering the nature of the interventions and that the project implementers did not factor in maintenance costs in their estimates. For interventions in which benefits could not be monetized, we enumerated the benefits in terms of value gained to residents, potential monetary gains, and qualitative improvements for the neighborhoods to underscore the importance of the interventions. Benefits were projected for certain interventions like the land tenure registration effort in Portmore, Jamaica, which has not attained its target as yet.

Our results match the evidence from the statistical analysis of BCRs of various categories of a heterogeneous group of risk management interventions by Wethli (2014), for the World Bank Development Report 2014), which also reveals a wide range of results. The table below compares the results of the CBA of some of our interventions with the estimates of the World Bank study.

Table 17. Comparative Benefit-Cost data from World Bank and USAID DRR Evaluations

Intervention Category	World Bank Report	USAID Evaluation
	Median BCR (Min–Max)	BCR
Flood mitigation	5.1 (0.01– 60.1)	13.19
Improved Water and Sanitation	3.7 (1.27– 61.5)	1.62
Earthquake mitigation	2.5 (0.01–6.5)	
Tropical Storm mitigation	3.4 (1.50–18.6)	
Early warning systems:	5.0 (0.93–57)	
Evacuation paths		6.48–138

Similarly, the CBA of 5,500 FEMA mitigation grants for earthquake, flood and winds hazards yielded an overall benefit-cost ratio of 4:1 (although the range varies between 1.5 for earthquakes to 5.1 for flood mitigation) (Rose et al. 2007).

The most significant limitation of the analysis has been the lack of detailed and organized cost data files in a technical format from the project implementers. Hastily collected cost data after project close out does not support good analyses. Ideally, project personnel should be trained in the basics of economic impact analysis from project inception onward and should be able to account for comprehensive costs associated with the interventions, articulate project benefits, and support a robust analytical process.

3. To what extent is the Neighborhood Approach effective as compared to more traditional DRR initiatives in the LAC region?

To address Question # 3, we conducted an extensive literature review for the years 2000–2018 that resulted in a total of 210 documents. Most were institutional documents (gray literature), from which we selected works prioritizing disaster risk reduction approaches in urban risk with a focus on precariousness, informality, and risk exposure in the Latin American and Caribbean region. The results were narrowed down to twenty six (26) disaster risk reduction approaches with a focus on urban risk in the LAC region. The five implementing agencies or funding sponsors that were most frequently mentioned in the DRR approaches with a focus on urban risk were: UNDP (4), USAID (4), World Bank (3), OXFAM (3), and IADB (2). We identified six DRR categories to conduct a thorough comparative analysis of the neighborhood approach with other DRR initiatives: 1) area-based, 2) market-based, 3) system-based, 4) institutional-based, 5) individual/household-based, and 6) operational. It is worth noting that some DRR initiatives fall within more than one category.

Table 18. DRR Categories

DRR Approach	Characteristics	Number of Documents
Area-Based	<ul style="list-style-type: none"> ▪ Identified geographical area ▪ Participatory ▪ Multi-sectoral ▪ Neighborhood as the ‘unit’ of the intervention 	13
Market-Based	<ul style="list-style-type: none"> ▪ Existing or new markets ▪ Cash or voucher program ▪ Supporting recovery and improving supply chain 	2
System-Based	<ul style="list-style-type: none"> ▪ Rehabilitation of critical infrastructure (water, sanitation, roads, communications) 	8
Institutional-Based	<ul style="list-style-type: none"> ▪ Individuals based on affiliation with a specific institution – school, health clinic or workplace (USAID 2008; DFID 2014) ▪ Supporting local authorities to recover 	12
Individual/Household-Based	<ul style="list-style-type: none"> ▪ Beneficiaries from violence, conflict and IDPs. ▪ Gender, education, health, disabilities, etc. 	2
Operational	<ul style="list-style-type: none"> ▪ Capacity building associated with emergency preparedness, response and recovery ▪ May include minor equipment devices such as radios, flashlights, helmets, etc. 	3

Adapted from Parker, E., & Maynard, V. (2015). *Humanitarian response to urban crises: A review of area-based approaches* (Rep.). International Institute for Environment and Development. Retrieved from <http://www.jstor.org/stable/resrep01316>

The neighborhood approach promoted by USAID/OFDA, primarily identified in the area-based category, incorporates most of the criteria utilized by other approaches (market-based, system-based, institutional-based, individual/household-based, and operational-based). Nevertheless, there is a significant difference between the pure geographical meaning of the term ‘area-based’ versus the richness of the neighborhood concept used by USAID: a living fabric of social, economic, and physical features that provides the residents of a particular territory with an identity, a sense of security, safety, and familiarity.

The results showed a limited number of initiatives/projects in urban settings, with an emphasis on areas with precariousness, informality, and risk exposure. However, some area-based approaches in institutions such as USAID, OXFAM, UNDP, DFID, and the World Bank have been identified. It is worth mentioning that several articles reviewed focused on policy recommendations but failed to identify specific

interventions/approaches that can be measurable in terms of community-based disaster risk reduction. Regarding methodological approaches, most of the literature review utilized qualitative methods. Only a few used mixed-methods. More traditional DRR strategies (such as system-based and/or operational-based) are less prevalent than neighborhood approaches (or area-based) or institutional-based, with a primary focus on local/national/INGOs efforts in disaster risk reduction. An increasing consensus on the determinant role of the community/neighborhood, both for purposes of effectiveness and sustainability, indicates the benefits of including a more participatory and multi-sectoral approach in a limited geographical area. Many of the DRR initiatives identified as participatory in nature include multiple stakeholders with a focus on community input, which can later work toward the creation of appropriation mechanisms in favor of making these efforts sustainable.

Another positive consideration of the area-based in comparison to other categories is their geographically-based nature, which has been utilized by different organizations in the response to the Haitian earthquake in 2010 (UN-HABITAT), suggesting the need to maintain, if possible, the same location for rebuilding if safety is guaranteed, or in the case of USAID/OFDA's neighborhood approach, that focused on communities with high socioeconomic vulnerability and exposure to natural hazards. As Sanderson (2017) notes, the area-based initiatives involve sectoral interaction of multiple stakeholders and focus on community engagement, which helps in identifying vulnerable populations. Other examples, such as the system-based Homeowner-Driven Housing Reconstruction and Retrofitting in Haiti (Build Change, 2014) has demonstrated effectiveness in empowering homeowners in Haiti by improving awareness on reconstruction after a disaster. This approach, along with mitigating disaster risk, has resulted in about 1,330 buildings retrofitted or built new and enabled 8,150 people to live in safer homes.

Worth noting in the literature review is the comparison between the Latin American and Caribbean regions and other regions such as Asia or Africa. The number of disaster risk reduction approaches such as the neighborhood approach or other area-based is significantly lower in the LAC region in comparison to other regions (e.g., Asia, Africa). Regarding the time span of the DRR approaches identified, the following timeframe applied: area-based (2004–2017); system-based (2009–2017); institutional-based (2007–2015); household/individual-based (2007–2011); operational-based (2007–2016); and market-based (2009–2015). These results suggest that while most of the DRR initiatives have been in place over a significant period of time (area-based, system-based, and institutional-based), others such as the household/individual-based approach have been less utilized or reported.

On a less positive note, the multiplicity of actors—local and national levels, implementers, and international organizations—can help to promote or hinder the integration of DRR practices and appropriation of the neighborhood approach by local actors.

As a methodological note, most of the studies fall under a descriptive level of analysis and do not reach the theoretical, indicative, or causal analysis. Some of the themes addressed in these approaches are: water management, public investment in urban developments, resettlement and resilience, early warning system, vulnerability reduction of landslides, eco-system based adaptation DRR strategies, homeowner-driven reconstruction and retrofitting.

4. What factors influence the effectiveness (or lack thereof) of urban DRR programs using the Neighborhood Approach in each country of focus?

We consider two categories of influencing factors for the effectiveness of urban DRR programs using the NA: 1) reflecting on internal aspects of each project and their immediate environment and 2) referring to the economic, political and social contexts in a broader sense, that is beyond the project's control. For instance, in the three projects in Lima (Carabayllo, Independencia, and Rímac), several emergencies triggered by 'El Niño' in 2017 in northern Peru created a sort of 'window of opportunity' to introduce innovative DRR practices at different government levels. The three project implementers found these 'disasters' as influencing factors that facilitated the process of building disaster risk awareness among authorities, which allowed them to get endorsement of authorities for the NA projects. Subsequently, we corroborated these causality relations across several interviews with national and local government authorities.

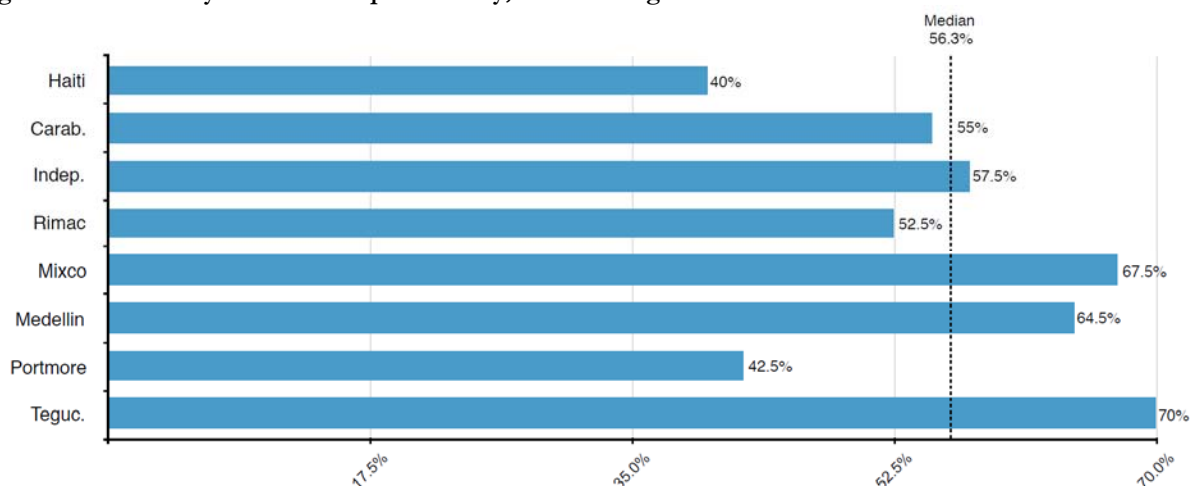
These factors affect the effectiveness of DRR programs and limit collaboration and engagement among communities, local and national authorities in a particular territory. Other positive influencing factors can be the capacity to lead and the ability of some implementers to bring together a very diverse group of actors with different agendas, interests and expectations under a common goal and principles, and especially the ability to preserve and enhance the significance of social processes such as building awareness, capacity development, and empowerment. This was particularly effective for the NA projects in Mixco, Medellín, and Tegucigalpa. We also observed that local governments with more comprehensive urban development capabilities avoided silos, fostered cross-sectorial integration and tended to mainstream DRR practices within urban development. Through interviews with several municipal and national directors in all projects, we concluded that this factor was particularly effective and a common feature in Carabayllo, Medellín, Mixco, and Tegucigalpa. Other external factors, in this case negative, may be related to bad past experiences between NGOs and donors which created mistrust among communities; the volatile political contexts in Mixco; municipal personnel turnover in Lima; organized crime and violence in Medellín; and specific land-tenure issues observed in Portmore.

6.2 Objective 2: Sustainability

5. To what extent are communities able to integrate DRR practices and take ownership of the Neighborhood Approach? What barriers to utilization of the Neighborhood Approach exist?

The answer to this question stems from focus group discussions conducted in the eight projects, in conjunction with inputs from interviews and field observations. We estimate that, in general terms, the communities were able to integrate DRR practices, although only in few cases took ownership of the Neighborhood Approach as a whole. With significant differences among countries, neighbors in Mixco, Medellín, Tegucigalpa, and the three projects in Lima demonstrated appropriation of DRR practices such as better garbage and waste water management for reducing flood impacts and afforestation and gardening for the risk of landslides and stone falls. This can be explained by the projects' strong emphasis on training and awareness development within communities; through techniques such as participation in the design and construction of physical works (e.g., murals, drainage construction, etc.); development of manuals and courses; among others. People were able to generate more consciousness about the risks they face and develop mechanisms to cope with and reduce them. In some cases, such as Medellín and Mixco, people achieved a certain level of empowerment as they began to demand more attention and action from local authorities. The Community Involvement indicator (see Figure 6) was developed using qualitative analysis of focus groups and interviews, assessing four aspects of community involvement: a) active involvement in planning; b) allocation of human and financial resources; c) active involvement in maintenance; and d) social control ('auditoria social'). The figure also seeks to inform the dimension of governance within each project and reflects participation and appropriation by communities.

Figure 6. Community Involvement per Country, in Percentages



Each of the four aspects was weighted equally from 0 to 25.

On the other hand, communities less able to integrate DRR practices were in Haiti (Port-de-Paix and Anse-à-Foleur) and Jamaica (Portmore), where appropriation of the project interventions was very limited. Community members in Haiti and Portmore explained that they expected more involvement and participation from implementers, municipalities, or ‘others’ in solving local problems. Other factors pointed out were that participation by fewer men (in proportion to women) and land-tenure insecurity may have limited the level of participation and subsequent ownership.

Although most of the barriers to utilization of the NA refer to contextual circumstances of each country, there are some general difficulties present in different degrees in all cases. The lack of participation tended to generate lack of appropriation when interventions were carried out, and this affected the potential of utilizing NA by the communities in the future. Likewise, precariousness and unemployment seem to have an important effect on how people interact and create community spaces for sharing and cohesion; the latter was especially observed in Portmore and Haiti.

6. To what extent are municipal and national authorities incorporating and institutionalizing the urban Neighborhood Approach? What evidence (including, but not limited to, policy or urban planning changes) is there that municipal or national authorities are managing urban risk differently due to USAID/OFDA’s urban DRR Neighborhood Approach?

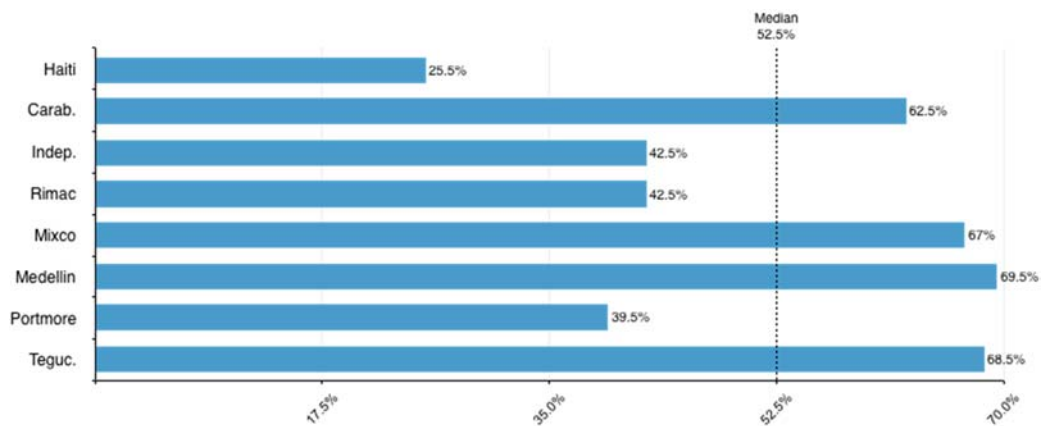
Considering an overall analysis of eight NA projects, we were able to estimate that municipal and national authorities are ‘moderately’ incorporating and institutionalizing the urban Neighborhood Approach. Nevertheless, there are specific cases where the institutionalization has been intense due to a particular context. Local and national governments show a reasonable, but not a strong or intense, incorporation of DRR approaches into urban planning practices that change the paradigm from just response to emergencies and disaster situations. Hence, there is a moderate acknowledgment of the complex interconnected reality of disaster risk in an urban environment.

Based on the interviews with 105 key informants from national to local levels of government in the eight projects, the evidence shows that most of the impact (in terms of institutionalization) was achieved at the municipal level. In cases like Carabayllo, Independencia, Mixco, Medellín, and Tegucigalpa, the

municipalities moderately incorporated new practices such as the use of GIS and social media for DRR; participatory design and execution of physical works; inter-sectorial working groups for neighborhood development (including DRR components); and inclusion of DRR measures within municipal budget plans, among others. According to our field observations and in conversation with the above-mentioned key informants, the best institutional ownership was accomplished in Tegucigalpa, Mixco, and Medellín, mainly due to three factors: 1) level of municipalization or municipal autonomy to intervene regarding DRR; 2) implementers succeeded in creating inter-institutional and inter-sectorial (including private sector) articulations based on agreements and communication, and then translated them into actions; and 3) willingness and commitment of key actors at the highest level of municipal government, such as mayors or municipal managers.

The municipalization or municipal autonomy, however, poses a sort of ‘distance’ between local governments and the national players and practices, becoming an important limitation to incorporating and institutionalizing the NA and its practices into upper government levels. The majority of municipal authorities pointed to a ‘gap’ between municipalities and national authorities. The Local Government Involvement Indicator (see Figure 7) was developed using qualitative analysis of interviews and field observations, assessing four aspects of local government involvement: a) active involvement in planning; b) allocation of human and financial resources; c) active involvement in maintenance; and d) regulatory action. The figure also seeks to inform the dimension of governance within each project and reflects participation and appropriation by local and national governments.

Figure 7. Local Government Involvement per Country, in Percentages



Each of the four aspects was weighted equally from 0 to 25.

On the other hand, factors that limit the institutionalization of the NA were pointed out by the participants from Rímac, Portmore, and Haiti: 1) personnel turnover in municipalities, particularly after popular elections, leads to difficulties in maintaining institutional memory and integrating knowledge and experiences from project implementation within these institutions, resulting in very fragile long-term approaches; 2) lack of willingness and commitment from local authorities; and 3) implementer’s lack of capacity/experience in involving local authorities and thereby fostering DRR awareness and motivation.

7. What enabling factors and factors impeding success contribute to sustainability of the urban DRR Neighborhood Approach? How sustainable could the targeted Urban DRR programs be without external donor support?

Building on USAID’s Post-Project Review’s five categories to address project sustainability of the Neighborhood Approach projects: social mobilization, institutional arrangements, physical works, environmental improvements and financial mechanisms, we complemented the analysis with the outputs of the different methodologies utilized throughout the study. Each of these categories comprises both enabling factors and factors that hinder success.

Social Mobilization

Enabling Factors	Impeding Success
<ul style="list-style-type: none"> • Community awareness aimed at active and inclusive participation. • Shared interests among neighborhoods and strengthen links between neighborhoods and local actors. • Participation of vulnerable groups (women, youth) and collaboration with civil society organizations. • Rapid response toward conflict resolution. • Physical evidence of the project and design of identifying elements. • Transparency as a key factor when sharing project’s results. • Shared responsibility by stimulating a sense of belonging. 	<ul style="list-style-type: none"> • Lack of presence of state actors aggravated by limited interaction with the municipality. • Combination of poor levels of education, lack of empowerment, and socioeconomic barriers in the community. • Time limitations of community members that hamper participation in the project. • Entrenched political interests and authoritarian leadership. • Frustrated experiences with previous organizations that negatively impacted on the levels of confidence of beneficiaries. • Isolated and sporadic collaboration that can impede the projects’ sustainability.

Institutional Arrangements

Enabling Factors	Impeding Success
<ul style="list-style-type: none"> • Political will to participate in the project that translated into committed leadership, adequate involvement of local authorities and shared credit. • Appropriate legal frameworks that support the sustainability of these kind of projects, such as Peru’s SINAGERD (National Disaster Risk Management Policy). • Established relationships among stakeholders that generate trust in the community. • Comprehensive knowledge of the territory, including its main local actors as well as the intervening sector. • Flexible structures that contribute to planning and implementation in pursuit of project’s sustainability. 	<ul style="list-style-type: none"> • Rotation of staff and nepotism that hinders the sustainability of the project. • Lack of transparency and accountability and deep-rooted corruption. • Disconnection between national and local frameworks and lack of enforcement. • Political interests and competing priorities that impedes community participation. • Other efforts are considered to be more visible than DRR, affecting the sustainability of the project. • Rigid structures that fail to contemplate the neighborhood approach demand for high level of flexibility in planning and administration.

Environmental Improvements

Enabling Factors	Impeding Success
<ul style="list-style-type: none"> • Recognition of previous outcomes in the environmental dimension that ensured sustainability of the project and identification of community advocates. • Education and awareness for environmental protection with a focus on youth and their parents. • Use of environmentally-friendly technological options that comply with environmental norms. • Selection of experts that can demonstrate knowledge on the topic while identifying potential negative consequences. 	<ul style="list-style-type: none"> • Lack of compliance and regulation of environmental standards and urban zoning regulations. • Deficient land use planning, lack of legal frameworks and environmental standards. • Lack of government funding for public works and infrastructure and poor interaction of all stakeholders. • Limited community awareness on how certain habits (e.g., waste disposal) can contribute to environmental degradation. • Solutions implemented contribute to environmental problems.

Physical Works

Enabling Factors	Impeding Success
<ul style="list-style-type: none"> • Identification of physical works that can help mitigate the neighborhood's risks. • Active participation in decisions on work projects can promote transparency and credibility. • Shared funding between local/national government and NGOs. • Neighborhood contribution to physical works in a variety of forms (workforce, monetary contributions, in-kind activities). • Improved social inclusion through the participation of marginalized members of the community/neighborhood. • Replication of physical community housing projects as a result of knowledge/techniques learned during the project. 	<ul style="list-style-type: none"> • Lack of community participation and deficient socialization of the physical work to be conducted. • Uncertain legal ownership of the location to be utilized and deficient municipality leadership over public spaces. • Lack of awareness on best techniques to perform maintenance and quality control of the physical work implemented. • Deficient knowledge of potential/alternative solutions and how to enforce safe construction standards. • Maintenance of public works is managed by few leaders. • Theft of construction materials.

Financial Mechanisms

Enabling Factors	Impeding Success
<ul style="list-style-type: none"> • Promotion of self-saving groups with the support from financial/banking institutions that help empower community members (e.g., women). • Legal restrictions to preserve the allocation of DRR funds. • Public supply of approved vouchers to improve accountability. • Competitive process to evaluate suppliers. • Economic methodologies and metrics along with financial models from other sectors. 	<ul style="list-style-type: none"> • Deficient coordination between local actors and the municipality. • NGOs working in double capacity which hinders repayment rate. • Uncertain land tenure and limited understanding of credit. • Volatile market prices that prevent project's sustainability. • Lack of awareness of DRR funds' allocation as well as limited financial information.

Beyond the enabling and impeding factors mentioned above, it is worth mentioning a common finding to the different NA projects, a circumstance referred to as concatenation, and that has been recorded in interviews, engineering inspections and transect walks. The concatenation consists of the capacity of a project to advance on the achievements of other projects or initiatives. In the same way, the project can at the same time offer the opportunity to other projects and initiatives to build on its own outputs or outcomes. The case of Anse-à-Foleur is a good example, where the NA project provided an excellent quality pipeline from the source of the water to the town, and then the World Bank built 10 water tanks followed by the municipality who built the distribution network. Although this mechanism could be confused with 'alliances' or 'partnerships', in the case of concatenation it is not necessary to reach an agreement between those who lead the undertakings. This can be illustrated with the opportunity that the Bank of Ireland and the microfinance company Alfasic saw to commercialize at low-cost a rainwater harvesting program through microfinance on the NA project in Tegucigalpa, and then in different neighborhoods. A final example, also from NA in Tegucigalpa, where a public university in Honduras took advantage of the geological studies sponsored by JICA to advance the studies required by the NA project supported by USAID. At the same time, the NA project prepared a digital elevation mapping based on Lidar technology, which is now serving the municipality and other projects supported by the international community.

6.3 Objective 3: NA Programming Strategy

The evolution of the NA strategy has been evident in other programmatic lines within USAID/OFDA since the first APS launch in 2012. Beyond the characteristics that define the NA, such as geographic focus, active participation, and sectoral concentration, the NA has been characterized by a closer cooperation among USAID implementers and partners, beneficiary communities, and local and national governments. Additionally, systematization has helped to reestablish the balance between project processes and outputs/outcomes, a closer follow-up to project implementation, and attention to the long-term impacts and their sustainability. By sharing techniques and results with the other awardees following the post-project evaluation of the first NA projects, greater awareness of project transfer and close-out was achieved.

Through its regional advisers, USAID has promoted a space for the exchange of practices and experiences among implementers. This has resulted in an important collective learning process, one that is unique in terms of depth and quality in the short amount of time that the NA strategy has been implemented. Over the five year strategy—with the exception of the NA project in Haiti—the implementation period of the projects has exceeded the period initially awarded, whether through a no-cost extension, a cost-extension, or as an unsolicited proposal to complete, replicate or expand the scope. Beyond the replicability and scalability of the NA strategy as a package in itself, this study has detected another clear trend with an enormous impact at national and even regional level in the different countries, where we are witnessing a second or even third wave of initiatives derived from the initial project. Cases that support this assertion:

- 1) Jamaica: Habitat for Humanity defined a land tenure strategy, together with the land authority in Jamaica (LAMP) and the University of Technology, that will be extended to the entire country, involving several other institutions and civil society organizations.
- 2) Peru: PREDES, along with the mayor of Lima, has led afforestation as a strategy for land use management and disaster risk reduction, now recognized internationally by FAO as "Forests and Sustainable Cities— Inspiring Stories from Around the World." Additionally, the agreement reached among the three NA implementers in Lima—PREDES, COOPI, and Save the Children—and one common partner, Practical Solutions, resulted in a coalition that shares practices and learning on different topics, including the aforementioned forestry project, replicated in all NA projects.
- 3) Honduras: GOAL, along with the municipality of Tegucigalpa, the Inter-American Development Bank, the University of Manchester, and the Nordic Fund are promoting the NA approach to develop a project to adapt assets to climate change. Additionally, GOAL is now replicating the Honduras NA experience in Haiti.
- 4) Colombia: the NA project implemented by Global Communities, Corporación Ayuda Humanitaria and Pontificia University in Medellin, expanded the municipal DRR approach to communities; it has now been integrated into the City's resilience strategy. Medellin is recognized as part of the 100 Resilient Cities movement. In addition, the NA project inspired a new DRR initiative geared toward small commerce and merchants in precarious areas of the city. The project led by FENALCO—a merchants association—is undergoing an internal transformation to include DRR and business continuity in all its businesses and promote this strategy among its affiliates. Moreover, they are strengthening disaster resilience in communities where they work.
- 5) Guatemala: Under the leadership of PCI, the NA project convened various local actors, among them the private sector—Cementos Progreso and AMANCO—expanding the impact of the NA to many other cities. On a larger scale, PCI contributed to a proposal to change public housing policies

in the country, introducing participatory solutions, technological approaches, and financial strategies with the support of international organizations and experts such as Build Change and Elemental. It is also establishing alliances with other NA implementers such as GLOBAL.

To gauge how the NA strategy is viewed within the USAID, a voluntary and anonymous questionnaire was shared internally at OFDA (Washington, D.C. and LAC). The respondents strongly agreed that the NA supports disaster risk reduction, the LAC DRR Plan 2015-2019, and the Sendai Framework. In the same vein, the respondents agreed it would be opportune to expand the NA within the LAC region and to other areas of the world where OFDA supports DRR activities.

The following were cited as the main technical or programmatic challenges for implementing the NA: community participation; followed by lack of resources in the community; issues with sustainability; and having the right partners with expertise in community development. Partners pointed to the main managerial and financial challenges for implementing the NA primarily as: government or legal restrictions; followed by the lack of willingness of local governments to institutionalize the policies and activities associated with the program; underestimation of costs during proposal stage; lack of time due to the performance period of the award; a lack of community leaders or other local partners; and a lack of financial resources in the community. In the event that the NA continues, one respondent suggested that, in the future, the APS should request that each partner clearly demonstrate examples of successful implementation and institutionalization of urban DRR through the NA.

7. Conclusions

1. As described in the NA Post-Project Review report, the USAID-NA responds to the growing urban population that lives in informal settlements, made up of diverse and unique neighborhoods that extend beyond geographical jurisdictions. Neighborhoods are a living fabric of social, economic, and physical features that provide the residents of a particular territory with an identity, a sense of security, safety, and familiarity.
2. The NA contributes to marginalized communities' sustainable and safe development while protecting the neighborhood and supporting its cohesion and self-determination.
3. The USAID-NA expands the attention of DRR interventions beyond individuals and households to a settlement approach, addressing critical disaster risk drivers and development gaps, and encouraging a long-term vision.
4. The study showed the need to balance physical and social interventions to match individual and collective needs and expectations associated with the common good. Thus, protecting the neighborhood and supporting its cohesion and self-determination, are important strategies to build community resilience.
5. In response to the daily challenges experienced by informal settlements, there is clearly a need to facilitate social mobilization to collectively overcome obstacles such as poverty, marginalization, insecurity and despair.
6. The NA shifts from the stereotypical humanitarian response to empower in communities, helping them become active members of the neighborhood planning processes and local governance mechanisms to build a resilient community, strengthen livelihoods, and improve the quality of life.

7. This study has expanded the scope initially foreseen for the NA, identifying different strategies that can stand alone, such as: land tenure, rain and storm-water management, housing relocation, and afforestation, among others.
8. The use of state-of-the-art technologies such as geographic information systems and remote sensing; methods for modeling hazards and risks based on global platforms complemented by local studies; methods of economic evaluation and econometrics in public health coupled with the use of traditional techniques based on surveys, focus groups, interviews, engineering inspections and transect walks—all of these allowed for the development of a comprehensive assessment of the NA strategy proposed by USAID.
9. The exploration and definition of units of measurement was essential to answering the questions proposed by USAID and marks the beginning of a second phase of the study—the preparation of a series of peer reviewed manuscripts that will serve to build a catalog of evidence-based DRR practices.

8. Recommendations

Based on the results obtained in this study and the NA Post-Project Review process conducted in 2016-2017, the following recommendations are proposed regarding the USAID NA urban DRR strategy:

- Continue fostering the NA strategy with some adjustments to the RFA process such as: 1) NA projects must have an ideal duration of three years; never less than two years; 2) NA projects should be formulated in two stages, the first one of diagnosis, awareness and social mobilization, followed by a second phase of implementation and transfer. The proposals must contemplate a process of programmatic adjustment between the two stages based on changes in assumptions and a better understanding of the territory and its social, cultural, economic, institutional, political, and environmental conditions.
- The NA could be diversified to allow different types of proposals that foster DRR and resilience-building, using the principles of geographic focus, active participation, and sectoral approach through projects that respond to issues associated with DRR of critical incidence such as land tenure, urban drainage systems, afforestation, precariousness, housing retrofitting, among others.
- Promote the use of tools to support decision-making, such as those used in the present study, including GIS and remote sensing applications, hazard and risk modeling, cost analysis, cost-benefit analysis, life satisfaction analysis, use of specific indicators, among others. Ideally, the proposals themselves should be prepared based on the principles of the above-mentioned techniques.
- All NA projects must have a communications plan, in a permanent form, to reach out to beneficiaries, and internal and external partners.
- The NA projects should have a plan, from the outset, to deal with the inherent uncertainty and lack of continuity in local public administration policies and practices, along with the rapid turnover of public employees. Likewise, strategies must be designed to deal with the incongruities between national and local regulations and processes.
- Intervention cost centers must be established, with files that conserve technical studies, designs, and technical specifications to maintain a permanent archive, which must be submitted to USAID at the end of the project.
- NA projects must strengthen its M & E system; beyond a contractual requirement its purpose is to assess the project's performance, improve practices, inform decisions, and increase accountability.

Consistent with the evidence-based practice approach used in this evaluation, a second phase of the study is recommended in the upcoming 12 months, in which a series of peer reviewed publications should be prepared based on the knowledge, data, and information generated in the first phase. The publications: papers, book chapters, technical and institutional documents, would be prepared by the evaluation team based in FIU in collaboration with USAID, other evaluation team members from the LAC region, national academic and institutional counterparts. The documents produced will serve as foundation to build a catalog of evidence-based DRR practices in informal settlements.

The topics initially identified are:

- Evidence-based evaluation of Urban DRR practices: the Neighborhood Approach
- Systematic Review on Urban DRR initiatives
- DRR metrics and Informal settlements
- Governance and informal settlements
- Risk Assessments and Modeling
- Economic Impact Analysis and NA
- Life Satisfaction Analysis
- Land Tenure and Disaster Resilience
- Exploring Urban Patterns in Informal Settlements
- Urban Integration and Multi-Functionality

These subjects could be addressed independently or jointly, depending on the editors' interests, publications scope, and opportunities identified.

Acronyms and Abbreviations

APS	Annual Program Statement
CDGRD	Departmental committees on risk and disaster management. In instances of CDGRD-NO, this refers Haiti's North-west Department (NO).
CENEPRED	Centro Nacional de Estimación, Prevención y Reducción del Riesgo de Desastres
CLPC	Comité Local de Protection Civile (Local Civil Protection Committee – Haiti)
COCODE	Community Development Committees
CODEDE	Departmental Development Councils COLRED Local Disaster Reduction Committee
CONRED	National System for the Coordination of Disaster Reduction (Guatemala)
COOPI	Cooperazione Internazionale Fondazioni
COPECO	Comisión Permanente de Contingencias de Honduras
DAGRD	Departamento Administrativo de Gestión del Riesgo de Desastres (Medellin, Colombia)
DINEPA	Direction Nationale de l'Eau Potable et de l'Assainissement (National Directorate for Drinking Water and Sanitation – Haiti)
DPC	Directorate of Civil Protection
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
FENALCO	Federación Nacional de Comerciantes (Colombia)
FIU	Florida International University
FY	Fiscal Year
GC	Global Communities (formerly CHF International)
GOAL	GOAL Global is an Irish Aid Charity
HfH	Habitat for Humanity
INDECI	Instituto Nacional de Defensa Civil de Perú
LUM	Land Use Management
LAMP	Land Administration and Management Programme (Jamaica)
MICOOPE	Federación Nacional de Cooperativos Asociados (National Federation of Associated Cooperatives – Guatemala)
NA	Neighborhood Approach
ODPEM	Office of Disaster Preparedness and Emergency Management
PCI	Project Concern International
PPR	Post-Project Review
PREDES	Centro de Estudios y Prevención de Desastres
SC	Save the Children
SINAGERD	Secretaria de Gestion del Riesgo de Desastres (Secretariat for Disaster Risk Management – Peru)
UNGRD	Unidad Nacional para la Gestión del Riesgo de Desastre (Colombia)
USAID/OFDA	United States Agency for International Development, Office of Foreign Disaster Assistance
UTECH	University of Technology (Jamaica)
WCDO	World Concern Development Organization WE Women's Empowerment

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