



PROJECT HIGHLIGHTS

Protecting Thousands of Lives and Livelihoods Across the Caribbean

Building a culture of resilience to landslides through a community-driven risk reduction program

Overview

It is known that the poor are the most vulnerable during a disaster – low-income countries account for only nine percent of disasters, though a staggering 48 percent of the fatalities. Specifically, small island economies are highly vulnerable to natural hazards because of their size, geography, and location, such as Saint Lucia which is continuously hit by storms and floods, having affected a total of 86,950 people (which is half of the total 2011 population) since 1900*.

Natural hazards such as storms and floods cause landslides – quite common in mountainous areas such as the volcanically-formed Eastern Caribbean islands that have a steep topography and soil characteristics, which are triggered by heavy or prolonged rainfall to potentially cause landslide. However, there are cost-effective, community-driven and life-saving initiatives that can help to reduce an area's risk to disaster; ultimately protecting lives and livelihoods. With the assistance of the World Bank and GFDRR, the Management of Slope Stability in Communities (MoSSaiC) helps to address risk to landslides. The approach saved thousands of lives and homes during Hurricane Tomas in 2010 and is being applied throughout the Caribbean to reach more poor and vulnerable communities.

Challenges

In Caribbean island states, hurricanes, frequent heavy rains, a mountainous topography, soil characteristics, land-use and construction of communities on hillsides without proper zoning and planning combine to create conditions that increase the risk of disasters from landslides. This risk accumulation is also driven by growing population, land-use change, increasing urbanization and poorly constructed housing, which often result in homes swept away, communities destroyed, and lives lost. In the case of Saint Lucia, the most threatening feature of Hurricane Tomas in 2010 was the torrential and sustained rainfall that it brought—totaling over 50 centimeters in just 24 hours.

Currently in the Caribbean, there are thousands of people living in unplanned housing built on hillsides surrounding urban areas. The location and characteristics of these homes are increasing the risk of a potential devastating landslide, thus hindering progress to the region's economic growth, poverty reduction, and sustainable development. This aforementioned risk results in reduced slope stability which increases exposure of the most vulnerable populations to landslide hazards.

Approach

The MoSSaiC approach addresses the landslide risk and slope instability by engaging communities to find viable, cost-effective solutions that are implemented by locally-trained contractors. The vision for this approach is to provide sustainable methods for communities to reduce their risk to landslides. What sets MoSSaiC apart from many other interventions is that it is rooted in communities from start to finish. Community residents are engaged in identifying landslide risk causes and solutions, employed in constructing the drainage solutions, and they work together with government managers and practitioners to deliver the mitigation measures. As a result, the vision for this proactive, sustainable approach to slope management is shared, championed, and owned by the communities themselves, not only by the government or an implementing agency.

Region: Latin America and Caribbean
Country: Various



Focus Area:
Risk Reduction

Structural and non-structural measures; land use planning, policies and regulation, infrastructure retrofitting, etc.



Highlights

Reducing risk and preparing communities through a cost-effective, community-driven initiative that addresses landslide risk management.

Prevention of disaster caused by landslides through the construction of small mitigation works such as drains.

Community-based approach builds capacity and local knowledge to better understand risk.

Proven project success through no damage, injuries, or loss of life after extreme rainfall events, such as Hurricane Tomas in 2010.



The Caribbean island of Saint Lucia is a success story in this effort to mitigate landslide disaster risk by creating locally-designed solutions – during Hurricane Tomas in 2010, the five communities that had addressed their risk via MoSSaIC incurred no deaths, injuries, damages nor losses (see Rachel Kyte, TEDx Sendai - <http://www.gfdr.org/gfdr/videos>).

Saint Lucia proves that the initiative does protect lives and livelihoods. During 2009, the MoSSaIC approach was implemented in Saint Lucia in five vulnerable communities. When Hurricane Tomas hit the island, every single community was severely affected where the storm passed through – except for the five MoSSaIC communities.

Saint Lucia's success in addressing landslide hazards in urban communities is a result of the innovative and solution-oriented engagement in community engagement from start to finish can enable community ownership of solutions. What sets MoSSaIC apart from many other interventions is that it is rooted in communities from start to finish. Community residents are engaged in identifying landslide risk causes and solutions, employed in constructing the drainage solutions, and they work together with government managers and practitioners to deliver the mitigation measures. As a result, the vision for this proactive, sustainable approach to slope management is shared, championed, and owned by the communities themselves, not only by the government or an implementing agency.

Results

Over 216 homes were part of a three-year pilot to build local capacity to create designs and build small structures to mitigate landslide risk. The MoSSaIC approach provides a proven methodology for communities to assess landslide risk, design and construct small mitigation works (such as drains), and have provided clear evidence that such low-cost investments can save lives and livelihoods. A tangible result of the MoSSaIC approach was observed following Hurricane Tomas in 2010, during which, none of the hurricane-hit communities with MoSSaIC interventions experienced landslides. Previously those slopes had frequently shown signs of instability during rainfall, even with conditions much less intense than during Hurricane Tomas.

Partnership

The MoSSaIC approach was first developed by researchers from the University of Bristol committed to providing a community-based and scientific approach to develop information-based of hazard reduction measures to mitigate landslide risk. The approach was first funded by USAID, which also supported the program in Saint Lucia. Subsequently, the following intervention consisted of small mitigation works that integrated hazard mapping and a technical assistance using GFDRR and IDA financing of approximately \$US2 million. Since 2004, each of the communities and related agencies have become core partners in the initiative due their sustained commitment to educate and share their experience.

Next Steps

The MoSSaIC community-based methodology has proven its success to tackle landslide risk in an effective, low-cost manner. However in order to scale up activities across the Caribbean, a concerted program of education, dissemination and adoption needs to engage stakeholders from all levels. Saint Lucia is currently working to create a MoSSaIC unit within the Ministry of Infrastructure, and Dominica is also looking to integrate such interventions into its vulnerability reduction projects, while Jamaica is planning four pilots in high-risk communities. Upcoming developments include a new educational web site and handbook to train and utilize in communities that are prone to landslide hazards.



CONTACT

Tiguist Fisseha, Disaster Risk Management Specialist, The World Bank
tfisseha@worldbank.org



Saint Lucia: from landslides to stability with mitigation works such as drainage throughout communities.

“MoSSaIC has helped tremendously, for example when Hurricane Tomas hit, none of the communities were impacted.”

Mr. Chamberlain Emmanuel
Contract Manager
Ministry of Communications, Works, Transport, & Public Utilities
Government of Saint Lucia

Lessons Learned

Community engagement and local participation can prevent disasters caused by landslides through the construction of small mitigation works such as drain construction.

Low-cost and low-technology investments can provide substantial benefits to reduce risk and save lives.

MoSSaIC is a participatory approach that builds the capacity of both communities and government agencies to understand/reduce their risk from landslides.

The MoSSaIC approach is replicable in other Caribbean countries to mitigate landslide risk.