



Landslide Public Awareness and Education Programs in Malaysia

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Abstract

Malaysia receives high rainfall throughout the year that results in floods and landslides. A National Slope Master Plan that was completed recently shows that landslides have cost Malaysia close to USD 1 billion. One of the components under the Master Plan is Public Awareness and Education. The Slope Engineering Branch in the Public Works Department of Malaysia has been running a public awareness and education program to provide information to the public since 2008. The objective of the program is to create awareness on minimizing the effects of landslides through actions and measures that can be taken by community members as well as by government and private owners of slopes. The program focuses on three sets of actions: (1) identifying key target audiences and finding out their information needs, (2) building capacity and capability of the federal, state and local authority stakeholders, and (3) exploring effective ways to reach out to the message recipients. There are several key messages that are conveyed to the audiences in this campaign, which are: “Learn, Monitor, Maintain and Report”. The program is targeted to the entire country with emphasis given to communities in at-risk areas. One of the outcomes from the program is the formation of a community-based organization on slope safety. In Bukit Antarabangsa where a major landslide occurred in 2008, a group of residents got together to form a watchdog group that became the eyes and ears of the local authority for detecting signs of landslides and slope failures. This group is represented by 4,000 residents in the hills of Bukit Antarabangsa and works very closely with the local authority. Another outcome is the formation of a slope unit within the engineering department of some local authorities in at-risk areas. Realizing that they are no longer able to manage slopes with the current staffing resources, budget and skills, they have begun to upgrade themselves by forming a unit that oversees slope issues. Public awareness programs on landslides have flourished since the last major landslide in Bukit Antarabangsa.

Keywords

Public awareness • Landslide risk reduction • Community resilience • Slope safety • Public participation

Introduction

Nestled comfortably between the Indonesian island of Sumatra to the west, Thailand at the north, and the chain of various islands to the southeast, Malaysia has been relatively free of major disasters. Or so it was widely thought until recently. Now with heavy rainfall events that show record levels that are off the charts and hillslope developments that

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started in the mid-1990s, landslides have become the number two major disaster in the country, after floods.

Major Landslide Events in Malaysia

Malaysia's penchant for development on hillsides and the construction of roads in hilly terrain have increased the occurrences of landslides in Malaysia. Landslides, which claim lives, damage properties and affect major transportation networks, have caused major economic losses to the country. Some of the major landslides that have crippled the nation are Highland Towers in 1993 that killed 48 people, Pos Dipang in 1996 that claimed 44 lives, and Keningau, Sabah in the same year that took 304 lives. The 2008 Bukit Antarabangsa landslide and the more recent Ulu Langat disaster that wiped out 16 lives at an orphanage shattered the nation's sense of security and complacency.

Formation of an Agency for Slope Management

The watershed landslide event that captured the attention of the Malaysian Government was the 2003 landslide in Bukit Lanjan, north of Kuala Lumpur, which incurred heavy losses to the Government in terms of extensive damage to the expressway, closure of a major artery to the cities, and loss of productivity and massive congestion due to the closure. In an effort to prevent such future events, a new unit within the Public Works Department called the Slope Engineering Branch was established to manage all slopes in the country.

A Roadmap for Malaysian Slopes

One of the tasks that the Slope Engineering Branch set out to do soon after formation was to commission the National Slope Master Plan, which is a 15-year roadmap on how to manage the slopes within the country.

The National Slope Master Plan is a comprehensive strategic plan that covers areas as diverse as institutional framework, hazard mapping, monitoring systems, information technology, loss assessment, training, public awareness, loss reduction measures, emergency preparedness, and research & development. Replete with strategic directions, action plans and key performance indicator measures, the Master Plan helps planners set priorities on what needs to be done to stem the increasing tide of landslides and landslips.



Fig. 1 The mascot for the campaign is a friendly engineer ready to dispense advice to residents

About the Public Awareness and Education Program

One of the first programs to be rolled out upon completion of the Master Plan was public awareness and education. The program was about creating awareness of slope safety by minimizing the effects of landslides through proactive actions and measures that can be taken by community members as well as by government and private owners of slopes (Yassim Ajam et al. 2004; Rashid bin Jaaper 2006).

Generally speaking, people tend to focus on safety only after a disaster happens, so the program aimed at getting them thinking about averting disasters before they occur.

Objectives and Key Messages

Although the main target groups of the program were the communities-at-risk and the general public, there were other target groups consisting of the state and local governments, private slope owners, media, universities and schools.

The objective of the awareness program was to convey two key messages to the public. The first was to let the public know that there is a body of useful information that is available to the public on the phenomenon of landslides and tips on monitoring and maintenance. The second is that there is a government agency dedicated to safeguarding the interest of public safety.

These messages were encapsulated in the campaign theme of "Learn, Maintain, Monitor and Report" and all activities of the awareness program were centered around this theme. The motif that tied all these activities together was the slogan "Safe Slopes Save Lives", courtesy of the Geotechnical Engineering Office in Hong Kong (Fig. 1).

Programs for Target Groups

The program consisted of campaign activities for various target groups. To ensure that each group received the right kind of information in the right amount, a needs analysis was undertaken. At the same time, a baseline survey was conducted for residents in communities-at-risk to get a measurement of the knowledge, attitude, perception and behavior of the target audience before the program was implemented.

Communities-At-Risk

One of the most important groups is the communities in at-risk areas because of the obvious risk to life and property (Emergency Management Australia 2000; Infrastructure Development Institute 2004; Emergency Management Accreditation Program 2006). The assumption at the outset of the program was that public awareness to this group would yield the best results among all the target groups because of the immediate safety concern to themselves.

During implementation, it was found that this assumption did indeed hold, and the program has elicited a wide range of responses from this target group. With some communities, the response was positive, with residents energized to embark on a community program of their own, while with others it opened a forum for spirited discussion. While sometimes the response was not always necessarily positive, the talks and interaction between the Project Team, presenters and residents served as a platform for discussing issues of slope safety.

Activities for this group comprised community talks on the residents' home turf for a grassroots level of interaction. Residents were pleased that a federal agency came to their communities on topics that concerned them. At these events, posters and brochures were given out (Fig. 2).

To sustain the awareness given to the residents, mini signboards were placed in strategic locations in key communities to reinforce the message of monitoring and reporting signs and maintaining the slopes in their surroundings (Fig. 3).

General Public

Although the general public may include members of the population who do not live in hillside areas, it is important that this group is also aware of slope safety. This is because many federal roads and favorite tourist destinations in Malaysia are located in hilly areas.

For the general public, activities such as roadshows featuring exhibit displays that explain the landslide phenomenon and safety tips are carried out throughout the country. Colorful



Fig. 2 A resident expressing his views on slope safety at a community talk



Fig. 3 A mini-billboard installed at key locations in at-risk communities to remind them to watch out for signs of slope failures

brochures and posters with cartoons helped visitors retain their knowledge long after they visited the booth (Fig. 4).

Children as well as adults visited the booths, and to make the event fun for them, coloring contests and quizzes were organized. The coloring contests elicited a lot of interest among children of all ages, and each session was packed with eager participants and hopeful parents.

At the request of the visitors, a virtual 3D exhibit was created so that participants can actually see how landslides form and take place (Fig. 5).

Local Authorities

Next to communities-at-risk, the most important target group is the local authorities. The authorities are the only government body with the charter to enforce safety



Fig. 4 Coloring contest for children at a mall



Fig. 6 Local authority officers attending an awareness seminar



Fig. 5 3D animation of a landslide

guidelines and by-laws and engage in maintenance measures. Because they are the first line of contact with the residents, it is crucial that the engineering departments of the authorities are well-trained and well-equipped.

Slope safety is still a nascent field in the works scope of local authorities, and the framework for addressing the problems and issues is not fully developed. However, the public's awareness of landslides and need for safety assurances is growing. As such, it is important that public awareness and education and training is provided to the local authorities to help support their growing expectations.

Information on design, construction and maintenance of slopes is given to local authority officials in seminars that last a half day (Fig. 6).

State Government

Because land is a state matter in Malaysia, an understanding of the impact of state government decisions on land use was



Fig. 7 State government officials at a seminar

critical. Thus it was necessary to ensure that all levels of state government body were aware of issues in hillside development.

As with the local authorities, topics such as design, construction and maintenance of slopes were presented in seminars around the country.

Seminar attendees included planning and engineering departments of the state government as well as other technical agencies such as Drainage and Irrigation Department, Department of Environment, Mineral and Geoscience Department and the police and fire rescue departments (Fig. 7).

Schools

Schoolchildren are our hope for the next generation of planners, builders and engineers, and education on good practices starts in the schools. In four simple presentations,



Fig. 8 An elated student for winning a prize in the match-and-win contest



Fig. 10 Local TV station interviewing residents on their views on slope safety



Fig. 9 Students from the Faculty of Engineering at a university

children are taught to learn about landslides, monitor for signs, maintain slopes and prepare for landslide emergencies.

Children by nature are observant, making them prime volunteers for watching out for the signs of landslides and slope failures. A special poster was created for schoolchildren, telling them to report to school authorities should they see any signs of developing around the school area. They could also take this knowledge back to their homes, where they can practice it in their home surroundings.

Talks in the school auditorium are given to audiences comprising mostly Grade 8 and 10 high school students. A match-and-win contest with prizes usually elicits a lot of enthusiasm from the students (Fig. 8).

Universities

At universities and institutions of higher learning, students normally learn the fundamentals of civil engineering and theories associated with the field.

The public awareness program aims to get students to realize that in the real world there is more than technical knowledge when it comes to slope engineering. Students are made aware of the impact that their designs and works may have on society as future engineers. Through the program, they also come to realize that there are social responsibilities in ensuring that design of slopes are safe for the communities and adhere to the principles of sustainability.

Activities for this group consisted of booths set up at convocations so that families of students were also able to view the information, as well as talks in auditoriums for first- and second-year university students (Fig. 9).

Media

The media plays a critical role in informing the public on slope safety. In the Master Plan, the media was identified as an 'information disseminator' rather than an 'information receiver.' This is because the media plays a powerful role in shaping people's opinion and thoughts on various subjects.

Up until recently, the media has played the role of reporting on landslide events as they occurred. This tended to cast a negative view of hillside developments in general. However, given the fact that hillside developments are going to continue in the future, a different perspective must be presented such that slope safety is perceived as being managed rather than left to the forces of nature and the whim of human developers.

To do this, mass media is used to provide useful tips and information to the public at large. This is done through educational advertorials in the newspapers and 60-s informational spots on television. A website dedicated to slope safety is also set up (Fig. 10).

To get journalists informed on slope safety, a media briefing is provided from time to time during shopping mall exhibitions.

Impact of the Program

The program ran for a period of 2 years and 8 months. A baseline measurement survey on communities at risk was carried out prior to commencement of the programs for residents, and a follow-up survey was taken at the end of the program period. The measurement instrument used was a Knowledge, Attitude, Perception and Behavior (KAPB) study. Comparative analysis was conducted, and results showed that the public awareness program met the target set in the National Slope Master Plan for phase one.

Qualitatively, there were many impacts resulting from the public awareness. The program impacted various target groups differently. Due to the program's phase one emphasis on capacity building, the groups that were most influenced were the state and local governments and the communities-at-risk. This reflected the time and commitment the Project Team spent on these two groups in particular.

The outcomes resulting from this program are significant in that they reflect institutional and long-term changes that affect the way hillside developments will be carried out in the future. They are as follows:

1. Awareness among local authorities in hilly areas for a proper slope management mechanism within their scope of work and the subsequent establishment of Slope Departments within eight local authorities in three of the high-risk states in the country
2. Establishment of state-level independent slope oversight committees for checking and approving all new development orders involving hills
3. Reporters of newspapers providing regular coverage of slope issues in the local beat, and coverage now includes educational material in addition to problem cases
4. Formation of SlopeWatch, a community-based organization that has grown into a non-governmental organization due to demand by residents for more information and

advice on averting slope problems and pushing the authorities for stricter supervision of developers

5. Residents associations in urban areas establishing sub-committees on slope monitoring so that residents can do their own monitoring and report to the authorities on any signs

These are some of the changes that the program has effected, although there is much more work to be done. However, what the Public Works Department has achieved through the Public Awareness and Education Program on Landslides and Slope Safety was to create opportunities for the federal government, the public, local and state governments and other stakeholders to engage in a fruitful dialogue and collaboration that is hoped will continue for years to come.

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