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The level of Landslide Awareness Among Officers In Penang, Malaysia

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Abstract - Landslide is a natural disaster that cannot be expected by the people. Lack of landslide knowledge and awareness of the dangers is the main cause of landslides in the state. Officers from various department play an important role in addressing the problem of landslides in Penang Island. Most of the officers are not fully aware of the vulnerability of landslide disaster. Drastic action should be taken to save the hills slope in applying the landslide awareness among officers. While at the governmental and professional level, there could be a larger awareness of the situation, even here specific action areas have not been forthcoming. Many hills are explored for various purposes. This need to be addressed if disasters/hazards is to be detected at an earlier and beginning stage. Yet the extensive damages to the life and property during the landslide, indicates that there is a clear lack of general awareness among the officers about the landslide problems. This study aimed to identify the level of awareness among the government and non-gorvernment officers towards landslide hazards because they are the officers in charge of determining future planning for the country and guide for future generations to ensure the safety environment and well-being of the country. From the survey, the results showed the awareness of landslide hazards among the officers are still need to be upgraded. This matter should be given serious attention not to the occurrence of any mishap in the future and need to be addressed if disasters/hazards is to be detected at an earlier and beginning stage.

Keywords: Penang; officers; landslide; knowledge; awareness.

Introduction

The mother nature is a gift of God is worth the peace of life. Human life is very dependent on natural resources on this earth. God created the universe balanced for human prosperity. Large earth serve as our home, plants as sources of food and medicine to life, so has the variety of animals and wildlife in ocean. The strangeness is water, wind and sky magicness is full of secrets. Therefore, appropriate for people who have been blessed with God given proper sense of responsibility to administer and preserve and maintain the well-being of this universe to a place that is suitable for livelihood and future. A safety hill slopes should be of concern to everyone, as the quality of human life depends fundamentally on the quality of the green environment. In recognition of the importance of the green hills in contributing to quality of life, the hillslopes
make up the largest part of catchments, research has been mostly focused on the landslide zone such that sources of nutrients from the hillslope component are more poorly understood by the officers. A lot of exploration along the hill slopes causing landslides over the country. All over the world each year landslide disasters take a huge toll in deaths, property damage and economic loss. Disasters have always been part of the human experience (Silverstein, 1992). Awareness is considered the potential instrument for achieving officers' participation in landslide hazard management in general and disaster mitigation in particular. For this reason, the researcher carried out a quantitative method to survey landslide awareness in Penang Island among 60 officers of government and non-government department. The study aims to determine the level of knowledge and awareness of officers in the selected districts in Penang Island and the capacity of the officers to respond to landslide hazards, and to propose a strategy for the dissemination of landslide knowledge while raising officers' awareness of landslide hazards. The incidents of landslide hazards are increasing in Penang Island. In this case, the officers need to provide a better knowledge on landslide hazard which include the environmental hazards as well as the enhancement awareness on landslide hazards.

Literature Review

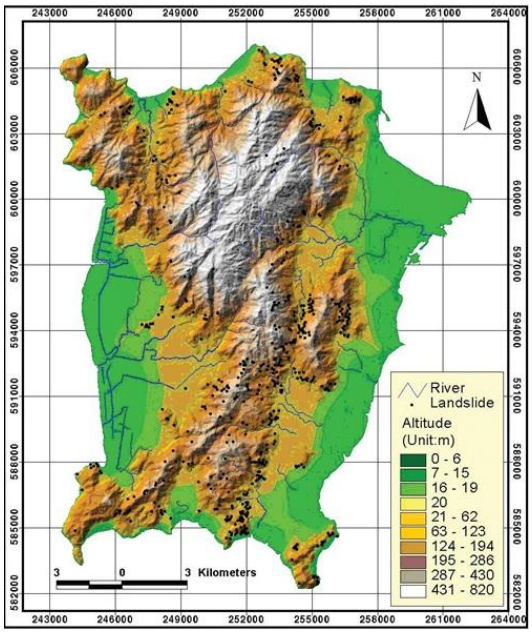
Vulnerability to landslides is dependent on slope and location of current and ancient slides. Activation of landslides depends upon environmental factors, such as amount of rainfall and human activities, such as road and housing construction. A comprehensive map of existing slide areas throughout the state would greatly improve the capability to prevent development in current slides areas, however, many landslides cannot be predicted and can be activated by multiple factors including earthquakes, high precipitation, overgrazing, and deforestation (especially from forest fires). In Penang, as urbanization and development increase, particularly in the hills areas, the potential for large losses from landslides also increases. Landslide risk should be evaluated on a case-by-case basis to reduce or eliminate exposure of public awareness and knowledge development. Research on officers' landslide awareness becomes vital if it is necessary to develop citizens who can take responsibility to protect and improve the environment. Effective landslide awareness at the local level with active participation of all key officers such as politicians, engineers, consultants, government and private departments and other agencies related to environmental issues (landslide hazard) would be ensured. Under the constructive view, however, the link between environmental conceptions and knowledge, attitudes values, and behavioural orientations is interpreted as a two-way, or mutually dependent relationship (Ballantyne and Packer, 1996). Additionally, officer's comprehension may be influenced by their magical belief systems, religious beliefs, and level of moral development. Quality literature that provides accurate information by age-appropriate means is an effective vehicle for helping officers acknowledge their feelings and broaden their understanding about natural disasters. Much of this devastation can be reduced through greater awareness especially among the officers and with existing mitigation techniques. Only through environmental education, people can develop a sense of concern for what is happening on a local and global scale and be encouraged to take appropriate action (Hale, 1993). If the officers are aware of the risks from natural hazards for the long-term procedures faced by the communities, they are more likely to take steps to reduce potential losses.

In our era of abundant and widespread information one is tempted to believe that this kind of learning process may lead to similar preconceived ideas among different socio-cultural environments (Membiela et al., 1994). Disaster tragedies as well as landslide hazards due to extensive development at high land areas and hill slopes given rise to the public concern in recent years. Recently, development of high land areas and hill slopes have increased risks of landslides which caused substantial loss of human life and damages to the properties and infrastructures. The most important lesson from experience is that prevention of disaster is better than trying to revenge the damage once it has occured as stated in Agenda 21 of the United Nations Conference on Environment and Development 1992 (Keating, 1993). In Penang itself, there are various legal instruments to regulate the laws, acts and procedures related to land development which includes the guidelines for high land areas and hill slopes development. However, the root of the problem is due to the attitude and decision makers who may be poorly advised by the respective authorities that may also lack of the skill, knowledge and awareness on the danger and consequences of approving such proposals. Lack of knowledge, awareness among the officers living at hill land areas also lack of enforcement, supervision and adequate knowledge by the respective officers have raised the risk of landslide hazards. High lands and hill slopes are very important for flora and fauna and the humans beings which provide benefits for their needs and been used to expand the habitat to improve the quality of life of all living things on earth. All the living things need to live and support each other to gather with other species in the ecosystem. An environmental disaster problems faced by people throughout the world is the degradation of the environment which is caused increases in human population and activities which may catastrophic for the future of the living things themself. So, it is important that the officers need to be aware of their environment and to improve the quality of life for now and future. Through the awareness of disasters made the environmental problems clearer very fast. Now in the community awareness of environmental issues and that the environment should be maintained has increased, but the level of individual involvement in the activities of environmental protection is still at low levels. In fact, many people still think that environmental protection is the responsibility of the parties only. Thus education and awareness program is necessary to ensure the involvement of each individual to care for the environment.

There are many discussions and research have been carried out on the environmental disasters, nevertheless, this problem become worst due to human activities on earth. All of us understand that more clearing high lands for development purposes can caused many natural disasters all over the world, however, it turns out that a great deal of effort in the fields

stated above will be necessary to achieve effective and early solutions to the problems. All global environmental problems share a common structure in which the key roles are played by concepts such as human values, carrying capacity, chains of causes, effects, norms, social dilemmas, and policy instruments (De Groot, 1993). Awareness programs against environmental disasters problems should be implemented in developing countries, such as Malaysia, since those countries are fortunate in being in the position to learn from the experience of developed countries and avoid their worst mistakes. As Penang State is a small state, it is not surprising, that developers have targeted land on hills and hill slopes for all sorts of development ranging from housing to transportation, industries and recreation. More than 50% of the Penang Island is made up of steep topography above 60m.

Figure 1 Geological map of Penang Island



As such, hill land is abundantly available on the island. Penang is one of the most rapid industrialisation, fast technological change, highest rate of urbanization and lead to greater demands for land. As such, it is anticipated that developers will cast their eyes on the remaining hill land on the island. Areas prone to landslides from two districts of northeast and southwest of Penang Island were selected. Therefore, it would be very interesting to examine whether the area selected of officers are aware about the landslide hazards. Hence, the aim of this research is to identify the level of knowledge and awareness aspects among the officers to prevent further landslide and environmental damages occur in the long term plans and to collect information helpful in enhancing officers' knowledge and awareness about the landslide hazards in Penang Island, Malaysia. To the best of the reseacher's knowledge, such information is not available for any other states in this country. Development on the hill land areas contribute a hot issues in term of safety and environmental lately. An awareness program among the officers for a long term is needed to assist the local authority to avert or minimise the landslide hazards. Hopefully this research will be very helpful to planners to identify the most suitable ways or methods in developing the hill land areas in future. This study can be particular merit to Malaysian environmental policy-makers in their pursuit to integrate knowledge and develop strategies towards a common Malaysian natural hazard awareness programs.

Methodology

At the middle of the year 2009, written guided questionnaires were distributed to the government and non-government officers in northeast and southwest of Penang Island in an attempt to investigate what is the level of officers' knowledge and their awareness about the landslide hazards of their state in relation to job category, positon hold, working experiences, age, race, marital status and education level. In this kind of research it is particular interest on guided questionnaires in order to collect a quick and clear information and to facilitate data interpretation and assess the validity, realibility and significance of the results. All the questionnaires were successfully collected from the students although the author had some difficulties to meet the officers in charged of the topic related. One Sampe T-test was employed to find out the significance of difference between the level of knowledge and awareness among the officers in the selected areas. SPSS was used for the analysing data. The questions in the questionnaires were simple and easily answered by all the officers without any doubt except those officers who are educated in English, they are less familiar with the Malay language. So the author had to explain the meaning to the authors who need. The questionnaires were divided into three section; section A, B and C. The aim of section A was to collect the information on demography of the officers such as category of work, position held, name of department/company, working experience, age, race marital status, education background, working status and monthly salary income. Section B was to examine the officers' knowledge on landslide hazards which is divided into 15 questions with two choices 'A' and 'B' were given. Section C was to elucidate the officers' awareness on landslide hazards which is divided into 50 questions. The reseacher use a Likert Scale where each question is given a choice of (1) most not agreed (2) not agreed (3) less agreed (4) agreed (5) most agreed to the questions asked. Specifically, 60 officers completed the guided questionnaires. The responses of the officers on answering the questionnaires were good indeed. The reseacher distributed the questionnaires in two parts of northeast and southwest of Penang island such as Balik Pulau, Teluk Kumbar, Teluk Bahang, Batu Ferringhi, Tanjung Bungah, Air Itam and Bukit Gambir.

Result

The study of landslide hazard awareness among the officers was made in two districts of northeast and southwest of Penang Island. Officers surveyed consists of politicians, civil servants, private sector, developers and consultants. 60 officers selected for this study. Based on the measurement formula chi square test analysis found there is a significant relationship between the questions surveyed on the level of landslide hazard awareness among the officers.

50 (83.3%) of the officers agreed that all development projects on land must be less than 100 meters away without consideration, and 53 (88.3%) of them agreed that an EIA is mandatory for all development projects on the ground from 75 meters to 100 meters without taking into account the size of the proposed area. This indicates that the officer has a high awareness of the landslide hazard which they are not interested in exploring the highlands, but seeks to control the priority area of self-interest. 47 (78.3%) of them agreed that the developers are not allowed to develop two or excessive lots nearby and 53 (88.3%) of the officers agreed that the developer does not necessarily have a part or all of the other companies in the development of adjacent lots. This reflects that the officers have a high awareness of landslides hazard in which they refused to take the risk of development of the same lots in the same area that can cause excessive erosion and also refused to dominate the region without considering the safety of others and are more knowledgeable about the procedures -construction procedures in the highlands. 57 (95%) of the officers agreed that PEGIS (Centre for Geographic Information System) need to broaden the scope of the entering monitor activities on the development of hill land using satellite images as usual up-to-date (latest) as well as constantly updating GIS maps of land use. This means that officers have a high awareness of the dangers of landslides because the officers have the experience and knowledge of the responsibilities and roles PEGIS in identifying sensitive areas
of landslide in Penang Island.

54 (90%) of the officers agreed upon two or more adjacent lots developed at the same time in a year as well as the size of projects that need to be added to determine the need for 50 hectares of hill land EIA and 56 (93.3%) of them agreed that environmental agencies should be authorized by the state government to identify sensitive areas for landslides and land gazetted since the landslide on a large scale in the hill land. This shows that the officer has a very high awareness of the dangers of landslides due to the experience and knowledge of the EIA to increase passion for the environment safe,

harmonious and free from any threat. 54 (90%) of the officers agreed to state that the safety of landslides in the country is very dangerous. This shows that the officer has a high awareness of the dangers of landslides as they are quite vulnerable to such disasters in this country due to their daily tasks is relevant to the environment. 30 (50%) the officer does not agree to stay in the hills and 56 (93.3%) of them agreed that the landslide caused by the greed of developers or consultants, while 54 (90%) of the officers agreed to the soil and climate is the cause of the incident landslides in many places. This shows that officers have a high awareness of the dangers of landslides as most of the officers directly involved with environmental problems and to know the causes of the landslide. But there is also an officer is still low awareness of the disaster as half of them still want to stay on top of the hill even heard about the
Dangers and effects of landslides.

55 (91.7%) of the officers agreed that the developer is the politicians who are not able to monitor and maintain proper hills and 52 (86.7%) of the officers agreed that the attitude of local authorities not really just temporary and enforcement units was created by 'ad hoc' as a result of a lot of workloads, while 55 (91.7%) of them agreed that the increase in technological advances will increase natural disasters. This means that officers have a very high awareness of disaster because they know their roles and responsibilities of developers and consultants, the duties of the enforcement unit and administrative matters of local authorities in performing activities of hill land. They are also more vulnerable to environmental disasters, especially landslides growing throughout the country and abroad in line with much of the pace of technology into the hills. 53 (88.3%) of the officers agreed with the statement that most residents who live in the hills are high-income people, while 56 (93.3%) of them agreed to say that the landslide result in adverse effects to people and infrastructure. This clearly shows a very high official awareness of the dangers of landslides as they are experienced in the work of monitoring, inspection and survey of many hills as well as viewed seriously the problem of landslides in the state. To sum up a whole can be identified that officers have a high awareness of the dangers of landslides although there are a few of them are still low awareness of the dangers of this landslide.

Discussion

The study found that there are still a number of officers from the selected districts with low level of landslide knowledge and awareness. Penang Island is famous for its rapid development and tourism, and it is not be left behind in terms of landslide. Since Penang Island is also known as a landslide-prone state, the government is not enough prepared for landslide hazards. A major disaster like this landslide was definitely is anticipated. Thus, there was lack of officers'awareness when the disaster struck, as well as coordination problems during the relief and rehabilitation phases. Although officers did their best to perform their duties, their lack of experience and the lack of landslide awareness kept them from achieving productive results. Although there are various policies, laws and acts of hill land, but the problem of landslides still occur in this state. The study found that most officers suggested there need an awareness and knowledge to reduce the above problem in this state especially. They also assume that if the government enforce the laws of land and hills landslide awareness programs to the community and not only in favor of certain parties in the case of hill land and surely the problem can be reduced. Efforts by the government in line with the statement of principles forests in Agenda 21 agreed at the International Conference On the Environment in Rio de Generio, Brazil, that all countries should take part in planting and greening the world through tree preservation. To achieve the goal of greening safe from global warming, the departments involved should be cautious in developing new policies and laws.

Things will become normal and safe if the officers were trained and taught the importance of protecting the environment from the grassroots. Government and non-government officers whom involved directly to landslide disasters can play a role in enhancing knowledge and awareness of landslide hazards. This can only be successfully implemented by the government and NGOs intervention itself. In this sense, the officers can help the government and NGOs to update existing policies and create a new act to address the problem of landslides which often hit the state of Penang Island. Besides that, a landslide awareness program should be formulated to address the problem of landslides to all levels of officers. Special courses need to be given to the officers concerned to create greater awareness of environmental issues. Talks about these

issues and posters should be displayed in all government and private offices. By doing this, the officers would be able to understand more closer about the landslide issues and be more alert on developing the hill lands in future. Generally disaster education training in departments is one of the most effective strategies for increasing officers' knowledge and awareness. Awareness among the officers will create a strong national environmental movement that will conserve the environment by solving landslide problems in future.

Conclusion

Serious effort are required to address current landslide problems and steer Penang Island and Malaysia itself towards to maintain a high hill and lands for the benefit of the whole community and the country. To help achieve the preservation of mountain land, existing policies should be updated and to enforce the law to address the issue of landslide. The present policies and acts that are now necessary legislation to be reviewed, re-examined and improved, with the landslide awareness program formulated for maximum environmental awareness and knowledge. Finally, to successfully to implement an awareness program of landslide, all levels of officers from various department must work together to address the disaster in this country. Officers awareness in landslide issues and that the environment has to be increased, but the level of officers involvement in the activities of land hill protection is still at moderate levels. In fact, many officers still think that environmental protection is the responsibility of the parties only. Thus, education and awareness program is necessary to ensure the involvement of each individual to care for the land hill.

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