

## **The Paradigm Shift of Managing Hilly Terrains Developments in Malaysia**

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**ABSTRACT:** *Due to vigorous development in the hilly terrain areas has resulted in river pollution and slope failure. Management elements such as planning, enforcement and monitoring must be addressed properly to avoid further degradation of the hilly terrains. The involvement of the public, private sector and non-governmental organizations must be given priority for maintaining sustainable development. This intended study involves how the constructs such as inspiration, moral values, volunteerism, cooperation and advice can be tested against the management elements. Even though there are various act, law, guidelines and plans being utilized to curb environmental problem, unfortunately the issues is persistence like thorn in the flesh. So, this study tries to explore the relationship between management and various stakeholders involving aspects such as inspiration, moral values, volunteerism, cooperation and advice related to planning, enforcement and monitoring in the hilly terrains areas.*

**Keywords:** *Hilly terrain; river pollution; slope failure*

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### **I. INTRODUCTION**

Present and futuristic populace increase will demand for new space and materials consumptions [1]. This statement is supported by [2],[3]and[4], and he added that urban space is already saturated with various developments. So, the next best space available must be sea front or hilly areas. Land reclamation from the sea is too expensive and the cheapest to develop is the hilly areas. Managing the hilly area developments is not solely dependent on government alone [5], [6],[7]and[8]. The governing of this sensitive area must be shared by the public, entrepreneurs and non-governmental organizations. [9]pointed if the importance of management aspects such as planning, enforcement and monitoring failed to be recognized systematically then the environmental quality of hilly terrains will be deteriorated. Managing the hilly terrain developments requires well balanced coordination between various stakeholders such the government, public, private sectors and NGOs.

The coherence and cohesiveness among the stakeholders are vital to the sustainable development of the hilly terrains. [10] and [11] have defined the involvement between these stakeholders as an act of volunteerism whereby the individuals seek the opportunity to be responsive society. According to [10], getting involved means having feelings towards an issue, ideas and acting on a problem by cooperation between one or two parties to resolve the issues. Where else [12],[13],[14],[15] and[16], stated that involvement is about individual psychology related to attitude and behaviour of the particular society. [17],[18],[19],[20],[21]and [22] argued that involvement must be defined according to cases and usage in studies related to sustainable development in the hilly terrains should be underlined clearly.

From the above discussions it can be concluded that involvement of the public, business community and NGOs are important to the sustainable development of hilly terrains. So, it can be summarized also that involvement also associated to the act of volunteerism, cooperation, advices, inspiration and moral values among the various stakeholders on sustainable hilly terrain developments.

### **II. THE PUZZLE**

There are several key issues which causes land management problems in Penang Island; (i) The city is old and land policies practiced previously were often difficult to replace or modify; (ii) Conflicts between redevelopment and conservation; (iii) Conflicts between modern technology and cultural heritage and traditions; (iv) Frequently changing demands for residential developments; (v) High expectations of the populace for an improved quality of life, such as better infrastructure and security, as well as improved recreational facilities; (vi) Non commitment and fragile cooperation from various agencies involved in the land use development and (vii) encroachment of the hilly areas. [23],[24],[25] and [26] stated that planning, enforcement and monitoring stages are very essential in order to avoid the above mentioned problems. Due to scarcity of land for

development the state has turn to hilly areas in the island. This created two problems that worthy mentioned; landslides occurrences and river pollution (TABLE 1 and 2).

**Table 1.** Water Quality Index for main tributeries of Penang Island

Tributeries	River	WQI	Class1	Pollution level2
Bayan Lepas	Bayan Lepas	65	III	ST
	Tiram	70	III	ST
		75	III	ST
Kluang	Ara	94	I	B
		81	II	B
	Relau	73	III	ST
Pinang	Air Itam	63	III	ST
		61	III	ST
		51	IV	T
		59	III	T
		64	III	ST
	Air Terjun	92	II	B
	Dondang	61	III	ST
	Jelutong	35	IV	T
Pinang	56	III	T	

Source: DOE (2013)

Note<sup>1</sup>

Class Usage

I Natural recycle.

Usage 1 – No need for treatment. Fisheries I – Very sensitive aquatic spesis.

II (A) Usage – Partial treatment needed.

Fisheries II – Sensitive aquatic spesis.

(B) Recreational usage involving bodily contact.

III Usage III – Total treatment needed.

Fisheries III – Has economic value with moderate tolerance and suitable for drinking water for cattles.

IV Irrigation.

Note<sup>2</sup>

B- Clean WQI 81-100

ST- Moderate pollution WQI 61-80

T- Polluted WQI 0-60

### III. CONCEPTUAL FRAMEWORK AND DISCUSSION

This study involves independent variables (society’s involvement such as (inspiration, moral values, volunteerism, cooperation and advice) and dependent variables (planning, enforcement and monitoring). [27],[28],[29] and [30] noted that inspiration related to tangible criteria such as creativity, dream, ideas, stimuli embedded in feelings and many other things that not easily observed by naked eye. According to to[31],[32],[33],[34],[35],[36],[37],[38],[39],[40],[41],[42],[43],[44],[45],[46],[47],[48] and [49] moral can classified as standard behaviour acceptable by society. They also said that moral must be genuine gesture, empathy in nature, righteous, equality and commitment. Where else, 50-63 defined volunteerism as setting goal, having self-esteem and rational thinking.

[64],[65],[66],[67],[68],[69],[70],[71] and [72] illustrated cooperation as act of goodwill, gaining knowledge, support, having goals, gaining new experience, having vision and mission and good leadership elements. [73], [74], [75], [76], [77], [78] and [79] has defined advice as equity, togetherness, goodwill, effective communication, self-assessment, extra knowledge and suggestion to obtain a strong decision Planning, enforcement and monitoring are three important pillars of management supported by five constructs on involvement such as inspiration, moral values, volunteerism, cooperation and advice for sustainable development on hilly terrains of Penang Island [80], [81], [82], [83], [84], [85], [86], [87] and [88]. They also stated that the public, private sector and NGO’s can play vital role as ‘eyes and ears’ to the government reporting the wrong doings that has deteriorate effects on the environment by irresponsible people in the hilly terrain environment. This is essential to save guard the quality of river and reducing the slope failure in the vicinity.

**Table 2.** Landslides occurrences in Penang Island

	Place	Date	Property damages (Million RM)
1	Pangsapuri Green Garden, Air Itam	27/6/2014	Appartment destroyed
2	Bukit Bendera, Air Itam	29/9/2014	Damage to property
3	Bukit Gambir, Bukit Bendera Relau, GeorgeTown.	23/11/2014	Slope failure
4	Kampung Selonok, Bayan Lepas	3/9/2013	No of houses destroyed
5	Bukit Bendera	14/9/2013	1 million
6	Paya Terubong	15/9/2013	2 million
7	Penang Hill	17/9/2013	Damage to the road
8	Cafe Cliff Puncak, Bukit Bendera	5/10/2013	Damage to the main water pipe
9	Jalan Bagan Jermal, Mount Erskine, Georgetown	1/6/2012	Three cars destroyed
10	Batu Feringgi	19/9/2012	Damage to the road
11	Pangsapuri Galoten, Paya Terubong	24/12/2012	Reataining wall at parking area damage
12	Pangsapuri Farlim Tower, Bandar Baru Farlim, Air Itam	4/6/2009	Several cars damaged
13	Perumahan Ivory Continental, Bukit Pantai Feringgi	12/8/2008	Nil
14	Balik Pulau	7/9/2008	Damage to the road
15	Taman Siakap, Jalan P.Ramlee, Kampung Perlis	7/9/2008	Property loss
16	Kem PLKN, Balik Pulau	11/9/2008	Two blocks of the National Training camp collapsed, damage to the adjacent agricultural plot
17	Taman Paya Terubong, Air Itam	23/10/2008	Four cars destroyed
18	Lorong Kulit, George Town	5/12/2008	Damage to 50 houses
19	Kawasan Perumahan Sun Moon City, Paya Terubong	28/11/1998	One bus and 14 cars were destroyed

Source: DOE (2015)

#### IV. CONCLUSION

A major challenge facing the Malaysian government is to provide a stable environment without hampering the industrial progress of the country. An effective way of addressing the environmental degradation is for the government to enlist the assistance of the both the public and private sectors as well as the non-governmental organizations. Punitive regulations alone will be less effective than when combined with collaboration with the public sectors actively setting standards and guidelines, monitoring itself, and establishing fair and efficient enforcement systems.

The cooperation between various stakeholders is very dilute in nature on the environmental management issues. This must be corrected with intensive research on the issues such as inspiration, moral values, volunteerism, cooperation and advice for sustainable development in the hilly terrains. Since the physical environment faces challenges from vigorous development strategies, immediate remedy must employed to sustain the existing environment. In the final analysis, the success of remedial measures initiated by the government to compensate for the depreciation of environmental assets does not depend on isolated factors, but on a complex combination of circumstances. While full voluntary effort by each and every citizen to preserve the environment remains an elusive dream of every government, it is nevertheless prudent to take every practical measure to arrest its decline.

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