



HONG KONG

CONTENT

1. OVERVIEW



1. DISASTER HAPPENING HISTORY



2. DISASTER REDUCTION MEASURES IMPLEMENTED



3. NEW CHALLENGES

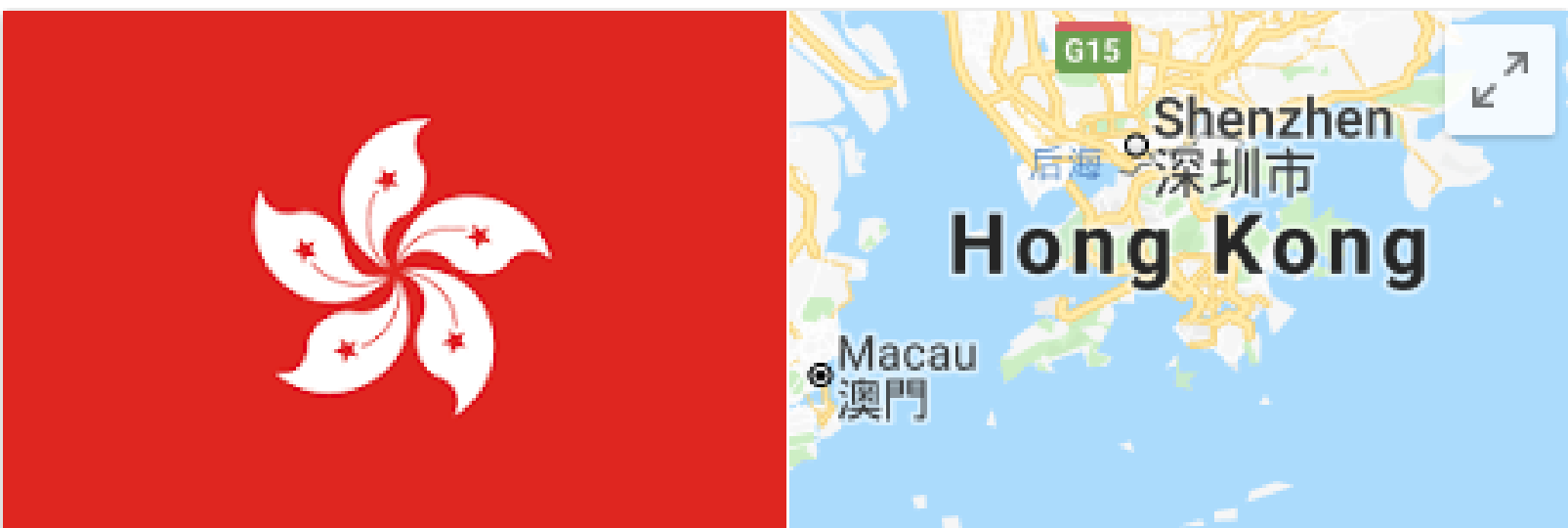




O V E R V I E W



Hong Kong Demographics



Hong Kong

Demographics

- Total area: 1 106.34square kilometres
- Land developed: less than 25%
- Country parks and nature reserves: 40%

Hong Kong is one of the most densely populated areas in the world, with an overall density of some 6,300 people per square kilometre. At the same time, Hong Kong has one of the world's lowest birth rates—1.11 per woman of child-bearing age as of 2012, far below the replacement rate of 2.1. [Wikipedia](#)

Population: 7.392 million (2017) World Bank

GNI per capita: 64,100 PPP dollars (2017) World Bank

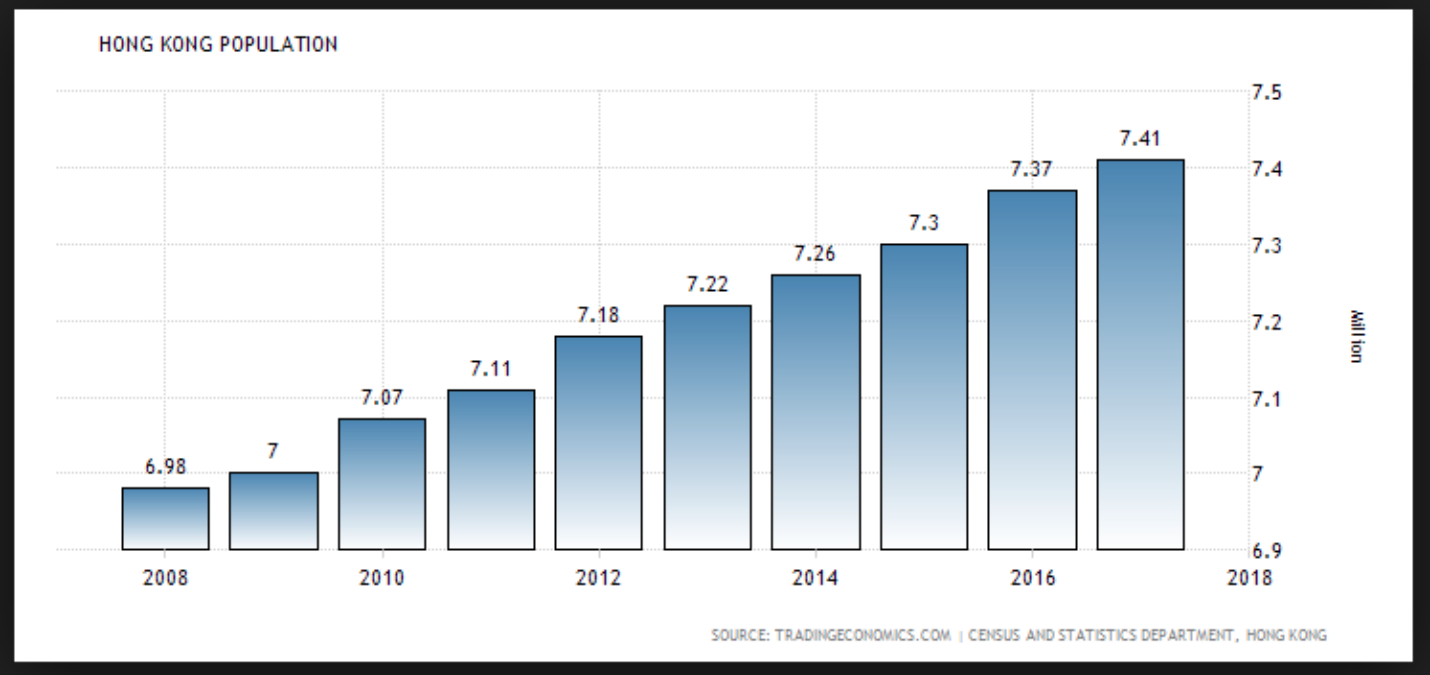
Life expectancy: 84.23 years (2016) World Bank

Fertility rate: 1.20 births per woman (2016) World Bank

Population growth rate: 0.8% annual change (2017) World Bank

Official languages: Chinese, English

Ethnic group	2006 By-census		2011 Census		2016 By-census	
	Number	%	Number	%	Number	%
Chinese	6,522,148	95.0	6,620,393	93.6	6,752,202	92.0
Filipino	112,453	1.6	133,018	1.9	184,081	2.5
Indonesian	87,840	1.3	133,377	1.9	153,299	2.1
White	36,384	0.5	55,236	0.8	58,209	0.8
Indian	20,444	0.3	28,616	0.4	36,462	0.5
Nepalese	15,950	0.2	16,518	0.2	25,472	0.3
Pakistani	11,111	0.2	18,042	0.3	18,094	0.2
Thai	11,900	0.2	11,213	0.2	10,215	0.1
Japanese	13,189	0.2	12,580	0.2	9,976	0.1
Other Asian	12,663	0.2	12,247	0.2	19,589	0.3
Others	20,264	0.3	30,336	0.4	68,986	0.9
Total	6,864,346		7,071,576		7,336,585	



Man Made Disasters

Fire

SHEK KIP MEI

DECEMBER 25, 1953

THE MAJOR FIRE ON **25/12/1953**
DESTROYED THE SHEK KIP MEI
SHANTYTOWN / SQUATTER
AREAS LEAVING **53,000**
PEOPLE HOMELESS.



AFTER THE FIRE, THE GOVERNOR ALEXANDER GRANTHAM LAUNCHED A PUBLIC HOUSING PROGRAMME TO INTRODUCE THE IDEA OF “**MULTI-STOREY BUILDING**” FOR THE IMMIGRANT POPULATION LIVING THERE. THE STANDARDIZED NEW STRUCTURES OFFERED FIRE- AND FLOOD-RESISTANT CONSTRUCTION TO PREVIOUSLY VULNERABLE HUT DWELLERS. THE PROGRAMME INVOLVED DEMOLISHING THE REST OF THE MAKESHIFT HOUSES LEFT UNTOUCHED BY THE FIRE, AND THE CONSTRUCTION OF THE SHEK KIP MEI LOW-COST HOUSING ESTATE IN THEIR STEAD. THE APARTMENTS WERE SMALL, ONLY ABOUT **300 SQ. FT. (28 SQ. M.)**. EACH COULD HOUSE **5 PEOPLE**, AND EACH BUILDING HAD A CAPACITY OF **2,500 RESIDENTS**.



Type	Managed by	Units	Population	Population %
Public Rental Housing	Hong Kong Housing Authority	749400	2022000	28%
Public Rental Housing	Hong Kong Housing Society	31279	82095	1.1%
Flat-for-sale Scheme	Hong Kong Housing Society	10360	20875	0.28%
Sandwich Class Housing Scheme	Hong Kong Housing Society	8920	14760	0.2%



POPULATION LIVING AT PUBLIC HOUSING APPROXIMATELY 2.14M (NEARLY 30%)

Garley Building Fire

NOVEMBER 20, 1996

A 16 Storeys High Commercial Building on Fire



AMOYCAN INDUSTRIAL CENTRE

JUNE 21, 2016

THE AMOYCAN INDUSTRIAL CENTRE FIRE BEGAN ON 21 JUNE 2016 WITH MORE THAN 200 MINI-STORES INSIDE THE BUILDING. THE FIRE HAD BEEN BURNED FOR MORE THAN 100 HOURS AND CLAIMED 2 FIREMEN'S LIVES.



THE FIRE CODE IS UNDER REVIEW.....

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N a t u r a l D i s a s t e r s

Landslide



A serious of landslides happened in June 1972 in HK caused **at least 156 people** lost their lives including the **67 people killed** in the above Po Shan Road Landslide.

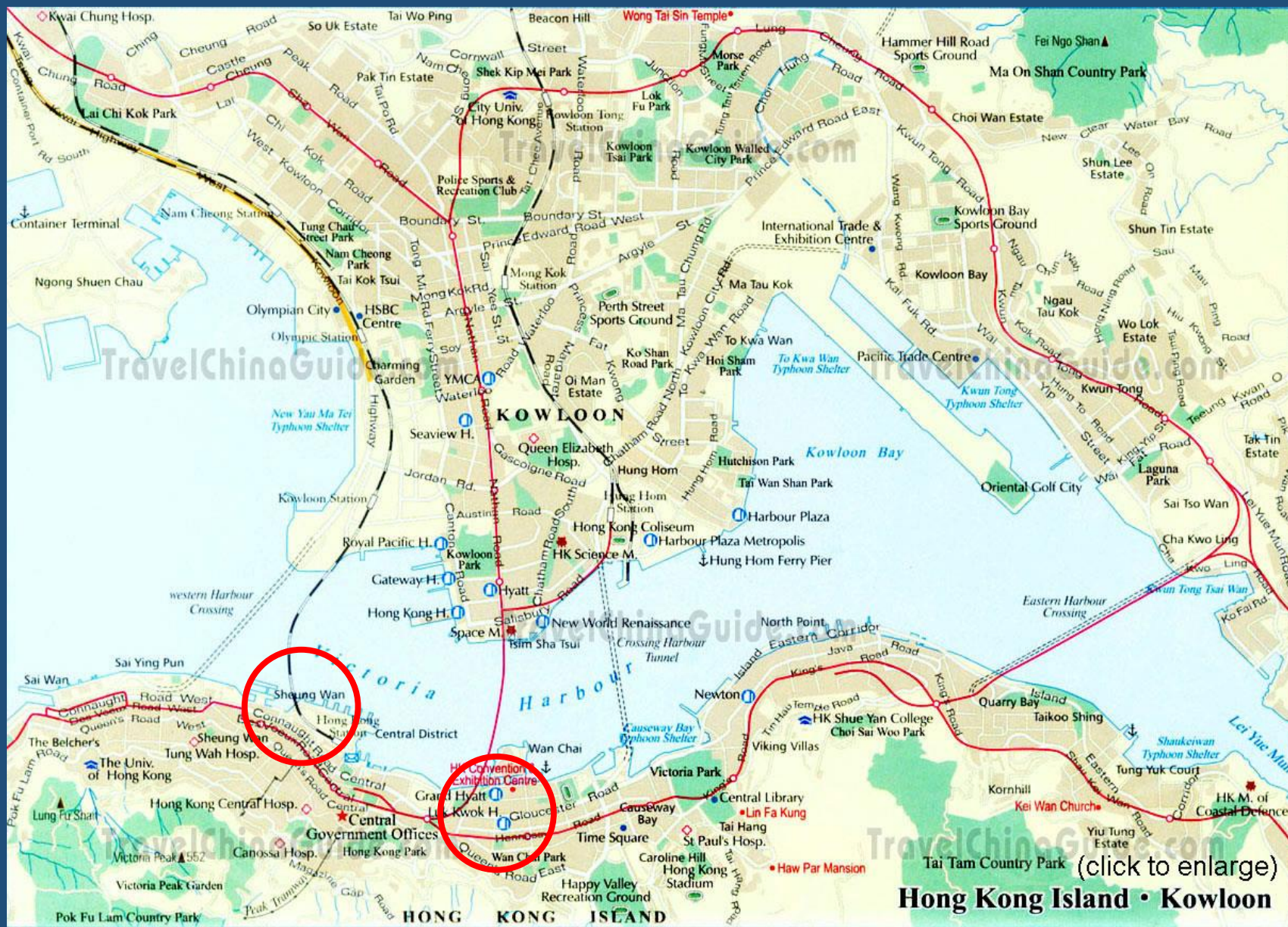
The landslides had ben caused by waterlogged soils in the area, a result of **Typhoon Rose** bringing unusually heavy rainfall in **August, 1971** as well as heavy rainstorms hitting HK on the days before the disaster.

This led to the guidelines for hillside excavation and safety & rescue procedures.

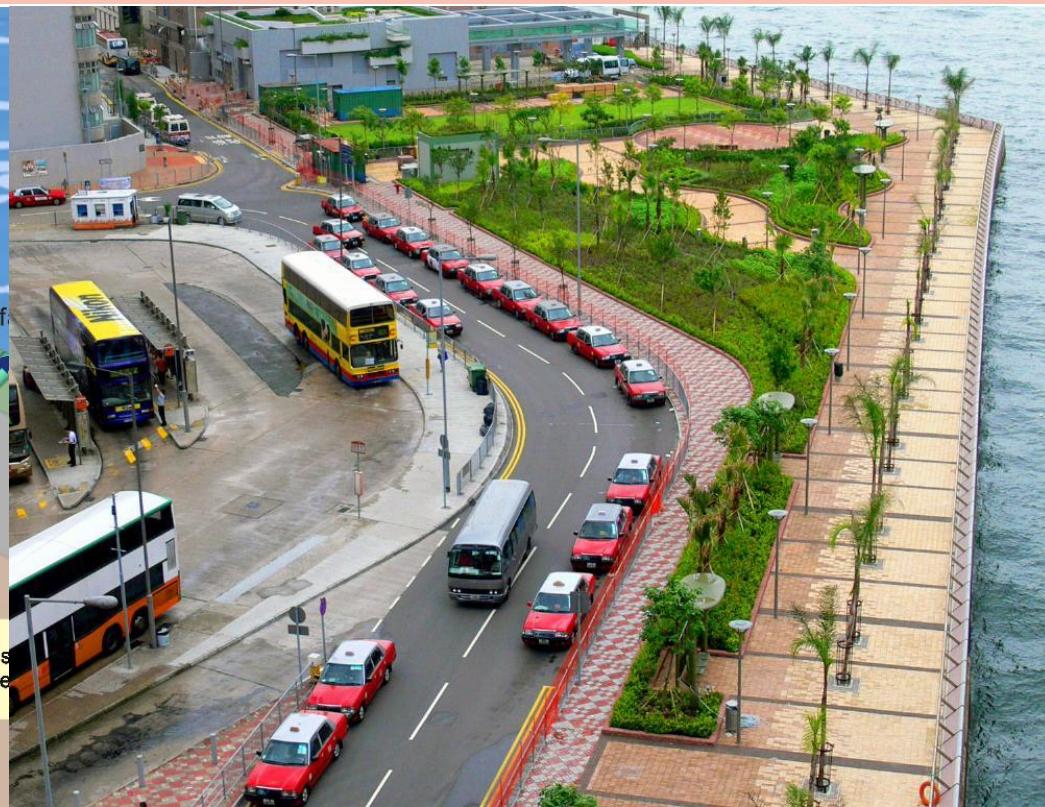
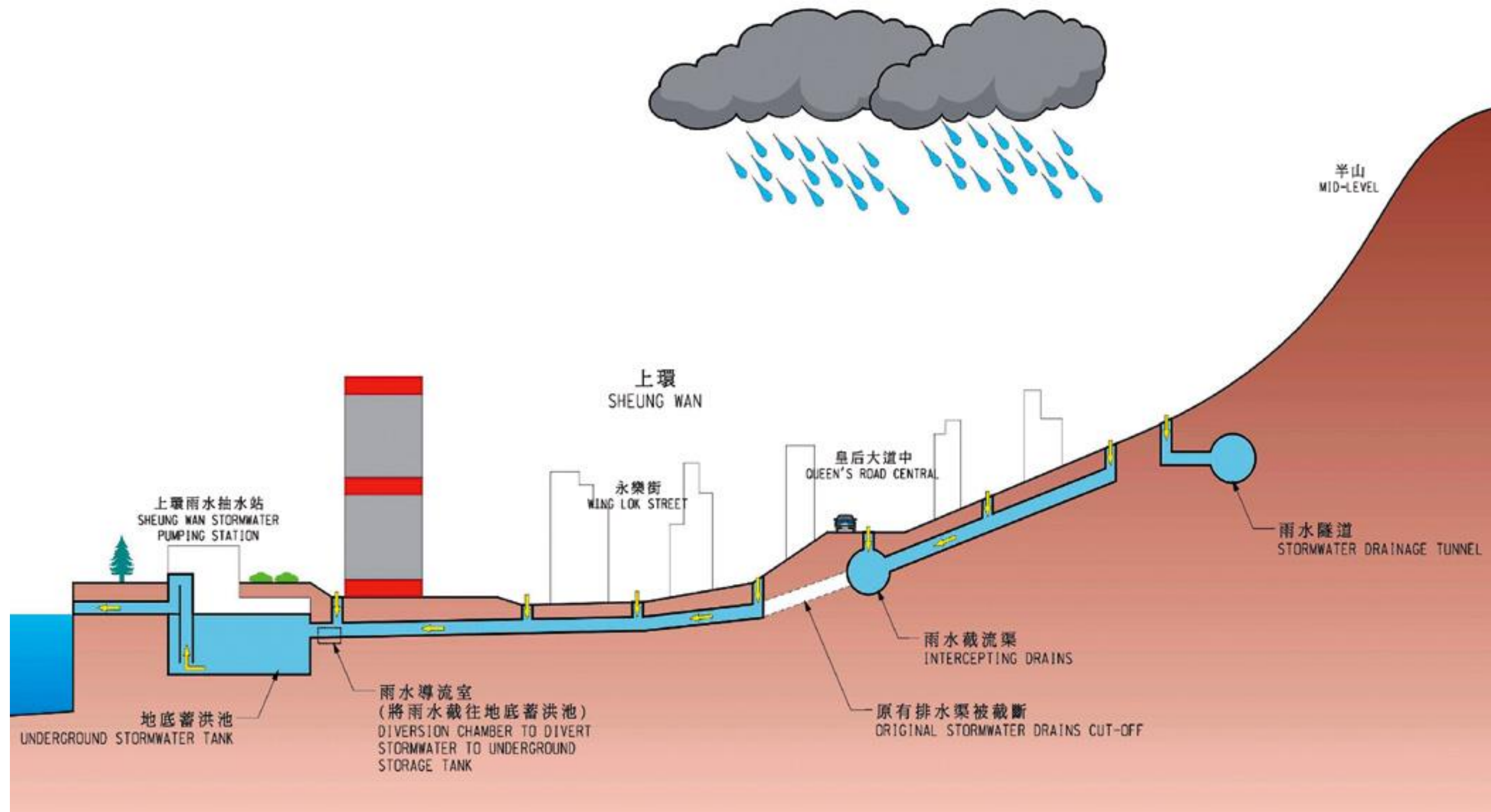
N a t u r a l D i s a s t e r s

Flooding

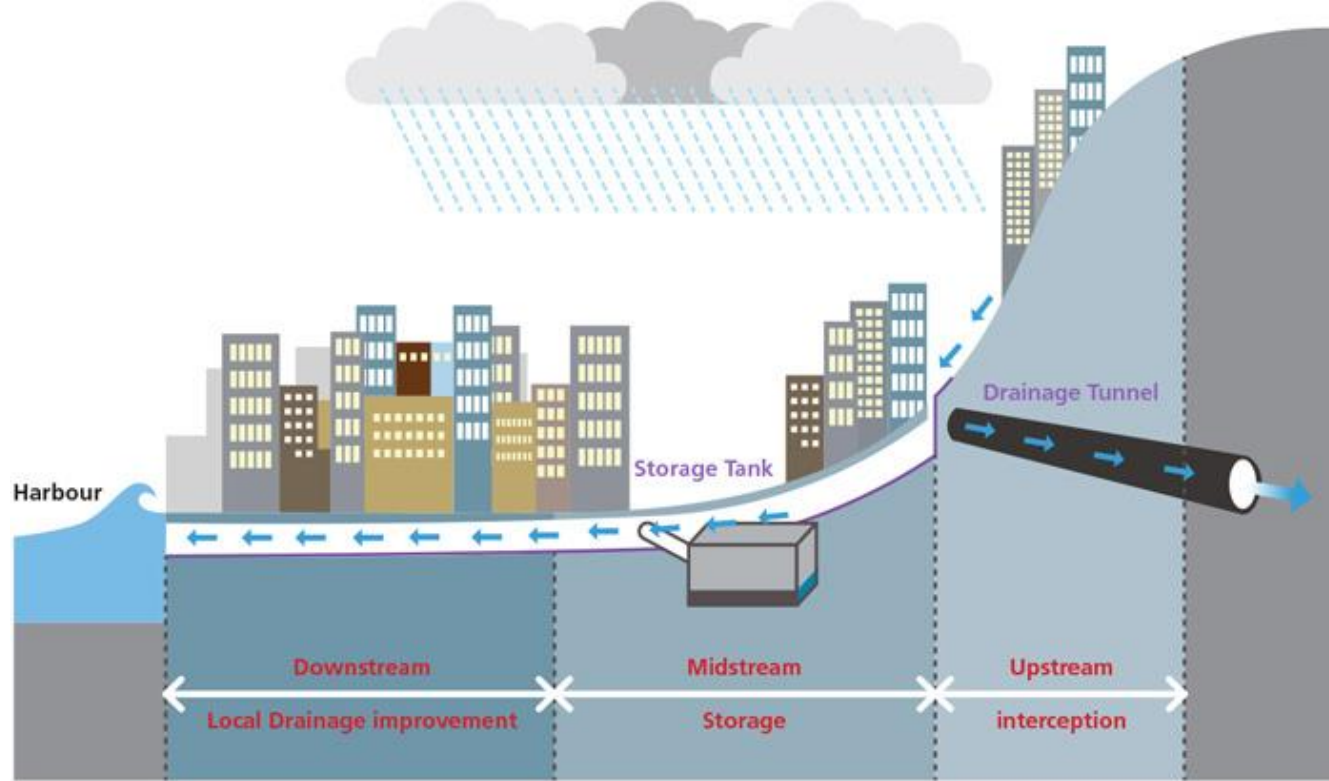
EVERY TIME WHEN THERE WAS HEAVY RAINFALL (MORE THAN 20MM) SHEUNG WAN IS ONE OF THE MAJOR SUFFERED REGION



SHEUNG WAN



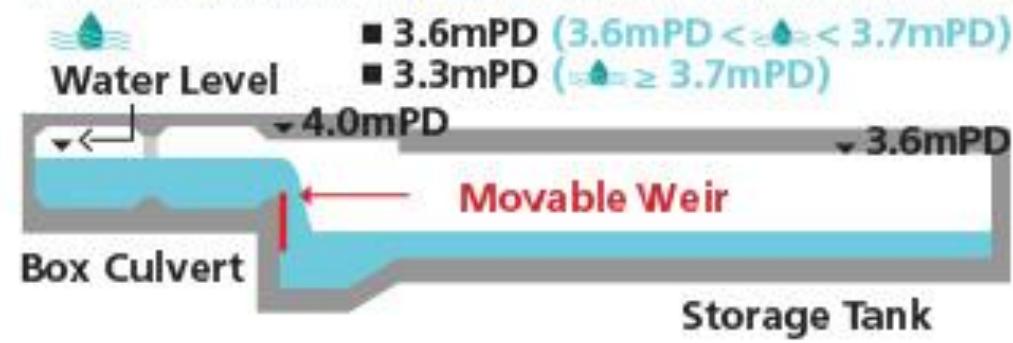
WANCHAI



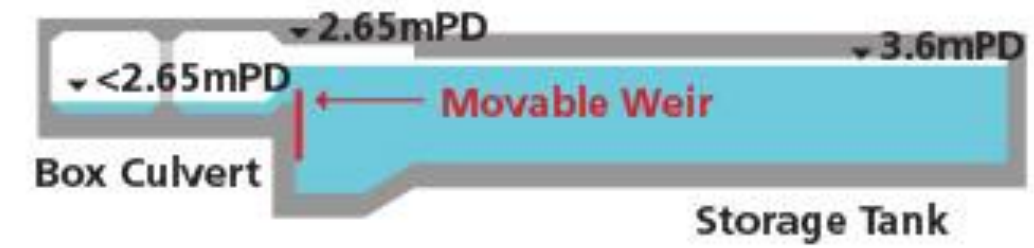
Light Rain/Sunny Day



Heavy Rain



After Heavy Rain



DISASTER RISK REDUCTION

- **Early Warning System**
- **Mitigation Measure**
- **Build Critical Infrastructures**
- **Improve the Vulnerability**



Emergency and Response

- Emergency and Storm Damage Organisation (ESDO) operates round the clock to handle emergencies and floods.
- In adverse weather conditions, the Emergency Control Centre is activated to coordinate disseminating information relating to emergencies and allocation of resources to deal with extreme situations and to liaise with other government emergency units



Flood Storage

- During heavy rainstorms, stormwater in some urban areas is diverted to storage tanks for temporary storage to relieve the burden of downstream drainage systems
- Stormwater storage schemes at Tai Hang Tung, Sheung Wan and Happy Valley are in operation
- In rural areas, 27 village flood protection schemes are currently in operation, protecting 35 low-lying villages against flood hazards
- Low-lying village are enclosed by flood protection embankments. Runoffs within villages are stored temporarily in flood storage ponds during heavy rainstorms and subsequently discharged by pumping stations



Interception

- Stormwater is intercepted at upstream and diverted for direct discharge into the sea or rivers, thereby substantially mitigating the flood risk in downstream areas
- Four drainage tunnels, including the Kai Tak Transfer Scheme, and Hong Kong West, Lai Chi Kok and Tsuen Wan Drainage Tunnels, totaling about 21 kilometres in length, have been in operation for years



Drainage Improvement

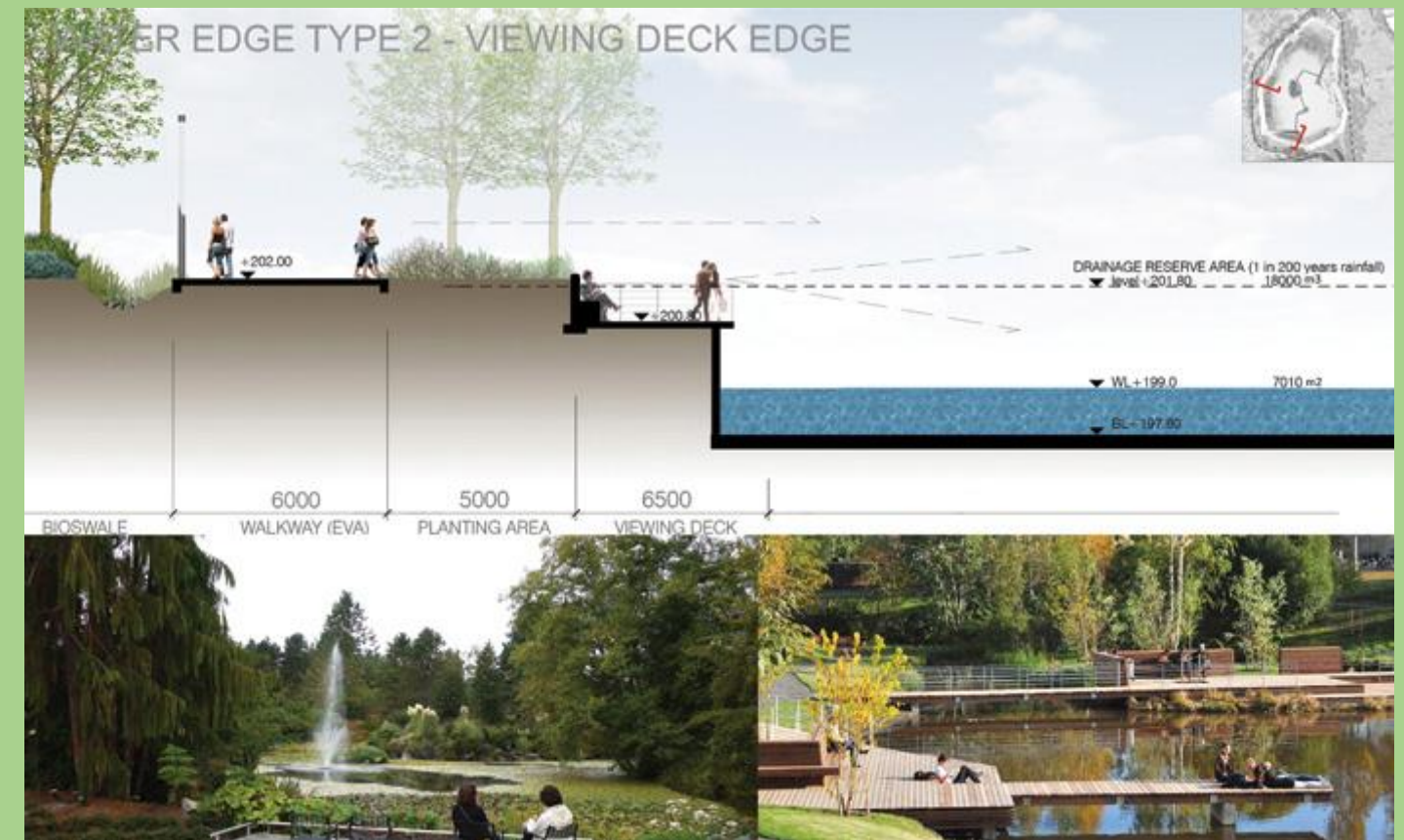
- Drainage improvement works are carried out to straighten, widen and deepen rivers and to construct or enlarge underground drains
- Over 100 kilometres of rivers have been improved and about 93 kilometres of drains upgraded to date

SPONGE CITY

Sponge City means that a city could function like a sponge that has great “**resilience**” to environmental changes and natural disaster. The stormwater could be **absorbed, stored, infiltrated and cleaned** during rainy days, and could be “**released**” and **utilised** as needed to enhance the ecological function of the city and reduce the flooding in the city.

Sponge City is a modern stormwater management approach which allows the city to collect rainwater and use the stored rainwater when needed. This concept advocates reducing urban development through natural drainage of rain to avoid large scale artificial channel improvement works.

The Flood Retention Lake serving flood control, leisure and rainwater harvesting functions. It will store stormwater during heavy rains to reduce the flood risk downstream, and some of the lake water will be used as irrigation and other non-potable purposes after suitable treatment. This project also provide scenic waterscape environment o residents for public enjoyment.



N a t u r a l D i s a s t e r s

Typhoon / Cyclone

Typhoons with signal No. 10 since 1946

	Date	Casualties
Vicente	July 24, 2012	138 injuries
York	September 16, 1999	2 deaths, 500 injuries
Ellen	September 9, 1983	10 deaths, 12 missing persons, 333 injuries
Hope	August 2, 1979	12 deaths, 260 injuries
Elsie	October 14, 1975	46 injuries
Rose	August 17, 1971	110 deaths, 5 missing persons, 286 injuries
Shirley	August 21, 1968	4 injuries
Dot	October 13, 1964	26 deaths, 10 missing persons, 85 injuries
Ruby	September 5, 1964	38 deaths, 6 missing persons, 300 injuries
Wanda	September 1, 1962	130 deaths, 53 missing persons
Alice	May 19, 1961	4 deaths, 20 injuries
Mary	June 9, 1960	45 deaths, 11 missing persons, 127 injuries
Gloria	September 22, 1957	9 deaths and 100 injuries
No name	July 18, 1946	5 injuries





TYPHOON **WANDA** CAUSED **434** DEATHS AND LEFT **72,000** PEOPLE HOMELESS. THERE WAS NEVER A FINALIZED DAMAGE TOTAL, ALTHOUGH IT WAS ESTIMATED IN THE **MILLIONS OF DOLLARS** AND **OVER 2,000 BOATS** IN THE COLONY WERE EITHER WRECKED OR DAMAGED.



This led to the government reclaimed up some of the low area 3 m from the sea level.



PROBLEMS FACING DURING TYPHOON

**FLOODING
BUILDINGS SHAKING
TREE FELLING
BROKEN GLASSES**

.....

ARCASIA EMERGENCY ARCHITECTS

E X A M P L E

**MAY 27, 2006 6.3 MAG EARTHQUAKE
STRUCK YOGYAKARTA**

5,000 PEOPLE KILLED

100,000 HOMES DESTROYED

200,000 OTHER HOMES DAMAGED

**THE NGELEPEN VILLAGE WAS FORCED
TO BE RELOCATED BECAUSE OF
LANDSLIDES CAUSED BY EARTHQUAKE**

THE NEW NGELEPEN VILLAGE

81 NEW BUILDINGS DONATED BY USA



PROBLEMS :

**INADEQUATE VENTILATION
LACK OF FLEXIBILITY**



WHAT WILL YOU DO AS AN ARCHITECT?

EXPERT IN HONG KONG

<http://web5.arch.cuhk.edu.hk/server1/staff1/edward/1u1v/files/fraternity/zhujingxiang.html>

MORE IS MORE

THANK YOU