Place- and Age-Responsive Disaster Risk Reduction for Hong Kong

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Leave no one behind
...including the eradication of extreme poverty, by ensuring equal rights and opportunities, socioeconomic and cultural diversity, and integration in the urban space, by enhancing liveability, education ... health and well-being...
Figure 2. Population aged 60 years or over, estimated for 1980-2017 and projected to 2050

Data source: World Population Prospects: the 2017 Revision

Source: United Nations Department of Economic and Social Affairs
World Conference on Disaster Reduction
18-22 January 2005, Kobe, Hyogo, Japan

Hyogo Framework for Action 2005-2015:
Building the Resilience of Nations and Communities to Disasters

www.unisdr.org/wcdr

Sendai Framework for Disaster Risk Reduction
2015 - 2030
Population: 7,377,100
Ageing population (65 and above): 543,026 (16.1%)
*2016 data

LAND AREA ANALYSIS

AREA OF TOTAL URBAN OR BUILT-UP LAND = 24.3%

<table>
<thead>
<tr>
<th>Land Uses</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>Private Residential</td>
<td>2.3</td>
</tr>
<tr>
<td>Public Residential</td>
<td>1.4</td>
</tr>
<tr>
<td>Rural Settlement</td>
<td>3.2</td>
</tr>
<tr>
<td>Commercial / Business and Office</td>
<td>0.4</td>
</tr>
<tr>
<td>Industrial Land</td>
<td>0.6</td>
</tr>
<tr>
<td>Industrial Estates</td>
<td>0.3</td>
</tr>
<tr>
<td>Warehouse and Open Storage</td>
<td>1.4</td>
</tr>
<tr>
<td>Government, Institutional and Community Facilities</td>
<td>2.3</td>
</tr>
<tr>
<td>Open Space</td>
<td>2.3</td>
</tr>
<tr>
<td>Roads</td>
<td>3.7</td>
</tr>
<tr>
<td>Railways</td>
<td>0.3</td>
</tr>
<tr>
<td>Airport</td>
<td>1.2</td>
</tr>
<tr>
<td>Cemeteries and Crematoria</td>
<td>0.7</td>
</tr>
<tr>
<td>Utilities</td>
<td>0.7</td>
</tr>
<tr>
<td>Vacant Land / Construction in Progress</td>
<td>1.5</td>
</tr>
<tr>
<td>Others</td>
<td>2.0</td>
</tr>
</tbody>
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Grassland 17.3%
Woodland 24.9%
Shrubland 23.6%
Agricultural Land 4.6%
Reservoirs 2.3%
Fish Ponds / Gei Wai 1.5%
Mangrove and Swamp 0.4%
Badland 0.2%
Quarries 0.1%
Rocky Shore 0.4%
Streams and Nullahs 0.4%

Total land area = 1,111 km² (including about 4 km² of Mangrove and Swamp below the High Water Mark)
Vegetated area covers about 78.7% of the land area of Hong Kong
Country Parks, Special Areas and Mai Po Ramsar Site cover about 41.7% of the land area of Hong Kong

Typhoon Hato batters Hong Kong
23 August 2017

Flood and debris around Heng Fa Chuen in Chai Wan.

Cars partially submerged and stranded on a street in Chai Wan.

Summary of climate change and Hong Kong

The effects of climate change have already emerged with Hong Kong experiencing raised temperatures, more frequent extreme rainfall and rising sea-level. The changes in Hong Kong’s climate in the 21st century may be summarised as follows:

- The number of very hot days and hot nights is projected to increase;
- The number of rain days is projected to decrease while the average rainfall intensity will increase;
- The frequency of extreme rainfall events is projected to increase;
- There will be more extremely wet years but the risk of extremely dry years will remain;
- Global sea level rise will lead to coastal changes all over the world, including in Hong Kong; and
- The threat of storm surges associated with tropical cyclones will increase.
Readiness of disaster events (1 strongly disagree -5 strongly agree):

1. I know when disasters will happen
2. I cannot control the happening of disasters
3. I have participated in workshops on emergency preparedness
4. To remain alive after disasters is by luck
5. Information and knowledge sharing are important
6. **Government can provide everything necessary when disaster happens**
7. **I am confident for reconstruction activities from government after disasters**
8. Talking about disaster with community member is important
9. I used to listen experts or DRR leaders who work or do activities for disaster management
Security Bureau Circular No. 2/2015

CONTINGENCY PLAN FOR NATURAL DISASTERS
(INCLUDING THOSE ARISING FROM SEVERE WEATHER CONDITIONS)

Emergency Support Unit
Security Bureau
Government Secretariat
November 2015

File Ref. SB FR/1-90/4

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6. OTHER NATURAL HAZARDS
- WARNINGS AND ACTION TO BE TAKEN

6.1 Given the hazards posed by Hong Kong’s tropical weather, it is necessary to provide separate warnings for Landslips, Thunderstorms and Tsunami, in addition to those for Tropical Cyclones, Rainstorms and Floods. Detailed background information on Landslips, Floods and Thunderstorms is given in Annex C. As for tsunami, which is a geophysical hazard, detailed background information is given in Annex D.

6.2 Landslide Warning - Heavy rain can cause landslips. A Landslide Warning will be issued by the HKO in conjunction with the Geotechnical Engineering Office (GEO) when there is a high risk of many landslips as a result of persistent heavy rainfall. When a warning is issued, a Landslide Special Announcement on precautionary measures will be sent to the local radio and television stations for broadcast to the public. The announcement will be updated at appropriate intervals until the likelihood of landslips has diminished (sample at Appendix A to Annex C). When the Landslide Warning criteria is no longer met, the HKO will cancel the Landslide Warning in conjunction with the GEO.

6.3 Thunderstorm Warning - Whenever thunderstorms are expected to affect Hong Kong in the short term (within one to a few hours), a brief Thunderstorm Warning Announcement will be issued (sample at Appendix C to Annex C). Thunderstorm warnings are issued irrespective of whether thunderstorms are widespread or isolated. If thunderstorms will affect isolated areas within a short period of time, the thunderstorm warning issued by the HKO will indicate the areas being affected, to alert members of the public to take appropriate precautions. When thunderstorms are widespread or the areas being affected vary, it will be mentioned in the thunderstorm warning that Hong Kong will be affected by thunderstorms without specific reference to individual areas. Reports of high gust, hail, tornado and waterspout as well as special precautionary announcements will be included in the Thunderstorm Warning when situation warrants. Thunderstorm Warnings are primarily targeted at departments and organisations (including the construction, electric power and other industries; those outdoors; those at swimming pools and beaches; and those at sea) which have specific action to take to minimise loss or damage caused by lightning. The warning is also broadcast to alert the public to the potential threat of lightning. Advice on precautionary actions to be taken by individuals is given in publicity leaflets distributed by the HKO.

6.4 Tsunami Warning - If an earthquake in the South China Sea or the Pacific Ocean is expected to generate a significant tsunami in Hong Kong (i.e. a tsunami with a height of 0.5 metre or more above the normal tidal level) and the estimated time of arrival (ETA) of the tsunami at Hong Kong is within 3 hours, the HKO will issue a Tsunami Warning (sample at Appendix A to Annex D) to alert members of the public to take precautions (sample precautionary announcements at Appendix B to Annex D). If a tsunami may reach Hong Kong but the tsunami height at Hong Kong is not likely to be significant, or a significant tsunami is expected to arrive at Hong Kong but the ETA of the tsunami is more than 3 hours away, then HKO will issue a Tsunami Information Bulletin (sample at Appendix C to Annex D) to notify members of the public. Tsunami Warnings are updated at hourly intervals until cancellation, which indicates that the tsunami would not reach Hong Kong or has passed Hong Kong and subsided. Tsunami Information Bulletins are updated once every 6 hours when the time is more than 3 hours before ETA, and once every hour when the time is 3 hours or less.
A paradigm shift is needed for Disaster Risk Reduction
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<th>Rationale</th>
<th>Data descriptions</th>
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<td>1. Older population</td>
<td>The degree of frailty increases with age, thereby leading to physical and cognitive decline and limited competence [that is, physical and mental health, intellectual capacity or ego strength (Lawton 1977)]. The absolute number reflects the actual number of people who need support</td>
<td>Number of people aged ≥75</td>
</tr>
<tr>
<td>size</td>
<td></td>
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<td>2. Institutionalization</td>
<td>Hospital patients and institutional care residents are extremely vulnerable and constitute a large segment of death toll during disaster</td>
<td>Percentage of institutionalized older population aged ≥75&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
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<td>3. Living alone</td>
<td>Living alone is prone to damaging psychological well-being. This slows evacuation and rescue under emergency scenarios</td>
<td>Percentage of community dwelling older population aged ≥75 living alone</td>
</tr>
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<td>4. Poverty</td>
<td>Poverty is associated with low socioeconomic status, which will limit older people’s capability to obtain resources and maintain well-being</td>
<td>Proportion of community dwelling older population aged ≥75 living in poverty&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>5. Communication</td>
<td>Communication is essential in community capacity building, which is also important under contingency situations. Communication obstacles are commonly associated with lower education attainment</td>
<td>Proportion of community dwelling older population aged ≥75 who had education level less than lower secondary (Grade 9)</td>
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<tr>
<td>obstacles</td>
<td></td>
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<td>6. Disability</td>
<td>Disability develops in the advanced stage of frailty. It is often related to physical, cognitive, and sensory impairment as well as difficulties in speech and hearing. It is the direct indicator of vulnerability</td>
<td>Proportion of community dwelling older population aged ≥75 with disability</td>
</tr>
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<td>7. Access to primary</td>
<td>An easier access to primary care system has a direct bearing on disease prevention and treatment. Conversation with medical practitioners enhances disaster literacy and health literacy, preventing the complications of chronic diseases</td>
<td>Rate of avoidable hospital condition per 1000 people aged ≥15&lt;sup&gt;c&lt;/sup&gt;</td>
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<td>care</td>
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<sup>a</sup> Statistically, institutionalized older population is calculated as the total older population minus domestic older population

<sup>b</sup> Local adaptation of the 2005 US Department of HHS Poverty Guidelines was used to adjust the dollar value by a purchasing power parity of five

<sup>c</sup> AHC rates were adjusted using the WHO’s age standardization method (Ahmad et al. 2001). It is a proxy of the provision of primary care services. Therefore, we do not restrict the age to the elderly
District Council Constituency Areas (CAs)
District boundary of Hong Kong

Categories of Social Vulnerability Index (SVI)

- 1.43 - 4.00
- 4.01 - 5.43
- 5.44 - 6.71
- 6.72 - 8.71
Facilitative Leadership

Pre-audit
- Archive study: “blackspots” record, past hazards events (timelines), and screening of vulnerable population
- Design routes
- Form audit groups: each group should have community representatives, planners, and volunteers

Place audit
- Record status quo of site information and comments from audit group
- Mapping (facilities, shelters, and blackspots, etc.)
- On site community seminars by planners and professionals
- Each route should be audited by people with different degrees of vulnerability (e.g., older people living alone, handicapped, general community members, etc.)

Post-audit (community-planning workshop)
- Collate observations and comments from participants and classify them into broad categories
- Community planning workshop to discuss the causes (both the outside and intrinsic factors) for the identified risks
- Give priorities to the causes most relevant to community
- Propose integrated solutions and call for general discussion
- Connect with NGOs and government departments for available funding and supports

Planning healthy and livable communities
- Monitoring
- Evaluation
- Revision (sustainability, efficiency, equity)

Flexibility

Fig. 1 Framework of collaborative place audit (CPA). Source The authors
Place audit

Community planning workshops
Place- and age- responsive Disaster Risk Reduction

1. People
2. Health/wellbeing
3. Right to the city
4. No one left behind
Place- and Age-Responsive Disaster Risk Reduction for Hong Kong: Collaborative Place Audit and Social Vulnerability Index for Elders

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