

# LAND. SCAPE.

MALAYSIA LANDSCAPE ARCHITECTURE INDUSTRY UPDATES

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## SPECIAL THANKS / PHOTO CREDIT

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### **PUBLISHED BY**

Institute of Landscape Architects Malaysia (ILAM) 1-10-3, Presint ALAMI, Pusat Perniagaan Worldwide 2,

Persiaran Akuatik, Seksyen 13,

40100, Shah Alam, Selangor, Malaysia.

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KDN No: PP16609/06/2013(033008)

ISSN: 2180-0944

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#### ON THE COVER

A PIECE OF GREEN IN THE INTERIOR

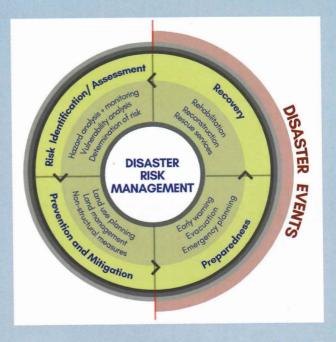
Idris Studio, an Ampang-based landscape architecture firm, explored the idea of green dining space by bringing nature into the indoor setting of a restaurant.

Photo Credit: Idris Studio Sdn Bhd

# LANDSCAPE PLANNING STRATEGIES FOR INUNDATION ZONES

Frederick Steiner (2000), an American ecologist who was a fellow of the American Society of Landscape Architects (ASLA) defined planning as the use of scientific, technical, and other organised knowledge to provide options for decision making as well as a process for considering and reaching consensus on a range of choices that need to be concerned. It is an approach which allows decision makers to understand the available resources and its impact to the society rather than looking at positive or negative values.

Climate change has had an immense effect on our atmosphere in recent years. Since that time, Malaysia has faced numerous catastrophic hazards including landslides, tsunamis and floods. However, to make thing worse, rapid development has caused Malaysia to face some issues of uncontrolled human intervention such as illegal activities on farming, mining and logging. Based on Figure 1 below, land use planning and management as well as hazards and nuisance management are vital in ensuring sustainable development. This is where we need landscape architects to make use of their expertise to plan and carefully design with the expectation that the impacts would be minimal.





#### **ABOVE**

Land use planning as prevention and mitigation attributes and suitability for sustainable development attributes (Attributes on hazards and nuisances highlighted in red). (Sources: FIG Website, Document No.38 (2003) and Site Analysis and Contextual Approach by J. A. La Gro Jr. (2007)).

Landscape Disaster Risk Reduction / In development of landscape planning, there are seven approaches to landscape disaster risk reduction (DRR) strategy which include:

- 1. To examine the landscape and its changes, by carrying out initial assessment of the risk areas. This is to identify the potential risk that affected the community.
  - Is there any potential hazard within the vicinity?
  - Who will be affected by the hazard? demography of those who live within the vulnerable areas.
- 2. To identify the strength and roles of agencies involved such as stakeholders or agencies that are responsible during an emergency event such as Mailis Keselamatan Negara (MKN), Angkatan Pertahanan Awam Malaysia (APM) and etcetera.
- 3. To involve multi-stakeholders in the planning processes focusing on strengthening the stakeholder capacity.
  - What is the distance from the nearest fire station/APM?
  - How long would it take for them to reach the event location?
  - Where is the nearest evacuation area?
  - Is there any early warning system in the affected areas?
- 4. To conduct a collaborative research/survey with agencies to gather information on problems and feedbacks.
  - To find out the root cause, dam risk, locations, and distance from the
  - To propose possible solution such as to set up a defining open space which can be used as evacuation areas.
  - To consider sustainability of planning and strategy which include community-based disaster management as part of the planning.
- 5. To carry out collaboration in landscape planning which Integrate ecosystem management or divide risk areas into manageable cluster.
- 6. To organize the collaborative implementation by defining short-term and long-term strategies. Sustainability of community-based programmes as part of initiative towards resilient community.
- 7. To promote adaptive management by planning a strategy which is flexible to suit or adapt to future needs.

Dam Related Inundation in Malaysia / Flood tragedy in Cameron Highlands, Pahang is one of the examples that can be highlighted, which happened due to uncontrolled farming activities. This human activity contributed to siltation issues to the reservoir in Cameron Highlands. In October 2013 and November 2014 (left page), Malaysians were alarmed by a mud flood event which caused major impact to the community of Bertam Valley. Water from Sultan Abu Bakar Dam, Cameron Highlands was released to prevent the dam from bursting following the heavy rain. Both events raised major concerns among the public on the safety precaution taken within the vicinity of Sultan Abu Bakar Dam.





ABOVE Situation in Bertam Valley after dam related flood hit Cameron Highlands (Source: Astroawani.com)



The overflow of Edenville Dam on 20th May 2020 which is located 30 miles from the Saginaw Bay of Lake Huron affected more than 80,000 people living in Midland County, Michigan City US. (Source: themorningsun.com)

All dams are designed to store water for the benefit of human beings. Dams are designed based on river's hydrography data. Changes in weather patterns significantly affect the data used to design a dam. These factors will give an impact on its designed safety perimeter. In Malaysia, there is a total of 104 dams with an estimation of total storage approximately by 84,000 million m³ of water. From the total, 81 are under category of large dams whereas 23 are small dams (MyCold, 2019). There are possibilities for dams to fail due to a few reasons, such as age, flooding, piping, slope failures, human intervention, or war (right photo) (Tadahiro, 2006). Most of the dams in Malaysia are aging. For examples, Bukit Merah Dam was built in 1906 (114 years old); Sungai Perak Hydroelectric Scheme comprising the Temenggor Dam was completed in 1978 (42 years old); and Chenderoh Dam was built in 1930 (90 years old). Malaysia has to prepare an efficient solution to this unforeseen catastrophic hazard to prioritise public safety.

Many are not aware that some of the major dams in Malaysia are situated within the vicinity of major cities or human activity areas. For examples, Batu Dam and Klang Gate Dam in Selangor, Sultan Abu Bakar Dam in Cameron Highlands, and Bukit Merah Dam in Perak. (Right)

Concerning this alarming issue here, it is about time to revisit the potential inundation zone for an alternative DRR strategy. This is to ensure the sustenance of the city as stipulated in SDG11 by improving the city and preparing the urban dwellers to be more resilient towards any expectations of hazards. The dam issue is just one of the examples in this discussion. however, if we are looking at the bigger picture, the urban dwellers are at risk towards various types of hazard - for instance, exposure to hazardous chemicals (as in the case of Sg. Kim Kim, Johor); factory explosion (as in the case of chemical treatment factory explosion in Nilai, Negeri Sembilan; and oil and gas (O&C) treatment plant explosion in Kemaman, Terengganu).

Conclusion / Landscape approach is suitable to be an alternative strategy in mitigating impacts of disaster risk. It is an interdisciplinary conceptualisation which takes into consideration barriers from various aspects and introduces alternatives for effective risk management. Involvement and participation of various stakeholders such as local authorities, local councils, responsible teams, and affected communities are important. Landscape planning plays an important role in the phase of disaster management, from mitigation to preparedness, and from response to recovery. This plan can protect community's residents, preserve its infrastructure, and minimise the economic risks. It must also consider the area population, its land uses, its history of natural or potential disasters, and the analysis of future risks from hazards. Landscape architects can be part of the team that supports government in realising the Sendai Framework towards resilient community initiatives - the framework that advocates for the significant reduction of disaster risk and the revival of livelihoods in the aspects of economic, physical, social, cultural as well environment.







Google maps showing Batu Dam and Klang Gate Dam were situated close to Gombak township. The Klang Gates dam, was completed in 1958 with a capacity of 25 million m3. It is the major dam for drinking water supply to residents of the Klang Valley, Kuala Lumpur. (Source: Google Maps)

Sultan Abu Bakar was situated within the town of Ringlet and Bertam Valley in Cameron Highlands. (Source: Google Maps)

#### BOTTOM

Map above showing many villages were situated within the vicinity of Bukit Merah Dam. (Source: Google Maps)

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