Will KL become a flood city like Jakarta?

FREQUENT flash floods in the Klang Valley have become more distressing, particularly for residents who stay in low-lying areas or those commuting by car and park in the office basement area. As there is often little time to move personal and household belongings to higher ground, the deluge also damages furniture and electrical appliances, not to mention fixtures such as flooring, resulting in tremendous losses.

Last year, the Klang Valley experienced the worst flooding after a two-day continuous heavy rainfall between December 17 and 18, which was followed by two (minor) floods on March 7 and April 25.

The statement from the Malaysian Meteorological Department (MetMalaysia) in relation to the southwest monsoon from May 14 until mid-September indicates that the Klang Valley, as part of the peninsula west coast, might experience frequent heavy rain with strong winds and lightning in the next few months.

Besides the Klang Valley, the west coast of the peninsula also consists of Perlis, Kedah, Penang, Perak, Negri Sembilan, Malacca and Johor – states that are becoming more vulnerable to extreme weather phenomenon, resulting in heavy flooding.

Will Kuala Lumpur become a flood city like Jakarta in the next few decades?

Weather patterns are nowadays getting more unpredictable due to the intensification of climate change. Apparently, the current administration and Kuala Lumpur City Hall (DBKL) have only recently become more proactive in flood management and mitigation measures – without which the capital city could experience even worse flooding to the point of "submerging".

The December flooding has revealed a lack of proper and effective coordination between the federal and state governments. As the National Disaster Management Agency (Nadma) did not want to lead the flood relief efforts, many people were stranded on the roads and rooftops for days. There were also unanswered screams of help from flood victims, as well as the reports of bedridden elderlies partly submerged in flood-waters.

For now, DBKL is committed to tackling flash flooding in the city centre by introducing 14 interim measures at approximately RM10 million under the Flash Flood Mitigation Action Plan 2022. However, the Public Works Institute of Malaysia needs one year to study the root causes of frequent flash floods and drainage systems. This raises the question as to whether KL is ready for more flooding in the next six months.

According to the study conducted by the Centre for Governance and Political Studies (Cent-GPS) in 2019, Kuala Selangor could disappear by 2030 and the Kuala Lumpur International Airport might just be located next to a beach due to erosion of coastal lines.

The digital stimulation developed by Cent-GPS through the Shuttle Radar Topography Mission model is worrying enough. Many countries have witnessed rising sea levels in recent years.

The Intergovernmental Panel on Climate Change forecasted that sea levels could be at least 1.1m higher by the end of this century. At the same time, severe flooding will happen regularly in low-lying cities.

In addition, the C40 network of global cities addressing climate change warned that more than 800 million people living in 570 cities worldwide would be vulnerable to the rising sea levels by 2050 due to the faster melting of polar ice caps than anticipated.

The melting ice phenomenon has been shown in a study based on Nasa and Esa satellite data, whereby the Arctic Sea ice was about 0.5m thinner last year than in 2019. Despite KL being around 7,060km away from the Arctic Circle, our capital city would face a substantial rise in sea levels within the next few years if carbon emissions remain at business-as-usual levels.

Over the past two decades, Malaysia's annual carbon dioxide (CO_2) emissions have increased from 126.20 million tonnes to 272.61 million tonnes, according to Our World in Data. In per capita aspect, Malaysia also recorded more CO_2 emissions – from 5.44 tonnes in 2000 to 8.42 tonnes in 2020.

Compared with neighbouring Asean countries such as Singapore (7.78 tonnes in 2020) and Indonesia (2.16 tonnes in 2020), Malaysia recorded higher CO_2 emissions per capita.

Therefore, now is the time for the current administration to enforce both climate and flood mitigation measures in KL, the most densely populated region in the country (8,157 per km sq) as shown under the **Statistics Department Population and Housing Census of Malaysia 2020.**

A proactive approach from the Malaysian government would prevent KL becoming the next Jakarta.

Meanwhile, as of January this year, the Indonesian government had started relocating its capital city to Nusantara.

The following are policy initiatives Emir Research would like to recommend the current administration and DBKL to implement for KL:

1. Create more mini forests, together with the installation of pedestrian walkways or cycling pathways to remove CO_2 and serve as a noise buffer. Although mini forests are small, they could provide habitat for other organisms like birds and insects. At the same time, mini forests could restore biodiversity to the city.

Permeable, highly porous materials could be used to construct pedestrian walkways or cycling pathways. The water would seep through the surface and become ground-water or drain into drainage systems.

2. Utilise idle land and abandoned buildings to grow various kinds of food crops, which is made possible by rapid development in agritech such as hydroponic, and indoor and vertical farming. Converting empty spaces into farms would encourage local food production and reduce greenhouse gas emissions.

One Utama Rooftop Farm is a good example, whereby the owner utilised the rooftop of the shopping mall to integrate agriculture and aquaponics together, enabling city dwellers to purchase vegetables or fishes that are pesticide-free.

Alternatively, some farmers could consider relocating their agricultural sites to rivers and lakes and even coastal areas to create floating farms. Thus, farmers could compact and layer the plants to become rafts about 1m deep and plant the seeds inside the them. The purpose of these rafts is to allow the agricultural farms to float on top of the flood-water.

3. Increasing car-free zones with more public transport service frequency would encourage citizens to shift their mindset and reduce the usage of privately owned vehicles. Prioritising walking, cycling, shared vehicles and public transport would reduce carbon footprint in highly urbanised areas.

4. Introduce reforestation around low-lying, flood-prone areas to regulate water flows, act as barriers against storm surges and protect against erosion and mudslides.

5. Clear solid pollutants that clog drains and rivers on a weekly basis. The government could install simple, custom-designed surveillance Internet of Things (IOT) modules at designated spots along the river to keep track of the clearance progress. The IOT package can consist of a pollution detection sensor, a camera, a micro-controller, a transmitter and a rechargeable lithium-ion battery.

6. Increase the carrying capacity of rivers and drains by either widening, deepening or both.

7. Construct swales along major highways, roads and housing areas prone to flooding. Swales are shallow, broad and vegetated channels that could convey storm-water and treat run-off to reduce pollutants. Thus, the water does not collect on land and reduces the likelihood of flooding events.

8. Create regular awareness campaigns and education programmes to promote understanding of environmental issues, especially disasters.

9. Continue developing effective early warning systems and disaster risk-reduction plans. For instance, MetMalaysia and Nadma could apply Geographic Information System to produce a flood hazard map daily, identifying high flood risk areas.

Also, Nadma and the National Security Council could warn the public through SMS. Residents who stay in low-lying areas could put their belongings in waterproof containers and relocate electrical appliances to higher ground in advance.

Moving forward, the current administration should form a Climate Change Commission suggested by the All-Party Parliamentary Group Malaysia–Sustainable Development Goals in January – comprising local and international experts to provide policy recommendations on climate change matters, including adaptation and disaster risk management in the country.

Meanwhile, all Malaysians must do their part by taking care of the environment by not dumping any rubbish into the drain and river, for example. The behavioural change would prevent further clogging of drains and rivers, reducing the risk of intense flooding, particularly in the city centre of KL, which has the potential of becoming a flooding city. – May 21, 2022.

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