

[MUSIC PLAYING]

TEJ KUMAR KARKI: Hello, my name is Tej Karki. I'm a visiting scholar in the MIT-UTM Malaysian Sustainable Cities Program. I welcome viewers to watch this video about the challenges of urban flooding in Malaysia.

Floods are the third most destructive disaster in the world, after storms and earthquakes. In Malaysia, floods account for 90% of natural disasters. The average annual costs of flood damage are over \$100 million US. In this video,

I will show how residents and local authorities dealt with floods in Kota Tinggi town in southern Malaysia, and what the global community can learn from this experience. The key message is that this video provides is that the residents and local authorities should not only strengthen their ability to deal with flood disasters, but also communicate with each other and take joint action.

From December 2006 to January 2007, huge floods that would normally be expected to occur every 50 years, occurred twice in Kota Tinggi. Heavy monsoon rain poured continuously for five days in mid December 2006. The rain prompted huge flooding in the area. Upstream flood control dams failed to contain the excess water. As a result, the downstream Johor river water levels rose rapidly and flooded all of Kota Tinggi. For one week, the town was under water.

Two weeks later, the rain started again and lasted four days. Since the soil was already saturated with water from the previous flood, it could not absorb any more flood water. As a result, this rain generated an even deeper and more widespread flood in the area. Between the two flood events, over 5,000 residents were evacuated. Fifteen people were killed, and \$44 million US of property was damaged.

Many town residents did not receive early warning messages in time. The huge unexpected flood shocked both the town residents and local authorities. Some residents left for shelters, some were stranded on roofs, and others sheltered in tall buildings near their home. Those who took refuge in the houses of their loved ones were also flooded. Eventually, they had to go to shelters. Many were not able to protect valuable assets like cars and furniture.

One resident, who was on a trip abroad during the flood incident, lost everything. Another resident's downtown boutique shop went completely underwater. Those residents who were busy praying inside their homes did not anticipate that the flood would rise so fast in their front yard. Those who did not go to the shelter in the daytime had difficulty getting rescued at night. Most residents were not trained in how to respond to flooding.

The households did not discuss flood issues with their neighbors, and they acted individually. The flood victims rescue needs far exceeded the ability of the Kota Tinggi district authority. The firefighters had limited resources to respond to mounting calls for rescue.

SPEAKER: (Non-English)

TEJ KUMAR Most city transport routes and vehicles were inundated causing a disruption in the supply of basic goods.

KARKI: Because of the disruption in the supply, the local authorities had a hard time meeting demand for food. Providing clean water and better sanitation were are other challenges.

More importantly, the town itself is located in a flood risk area. It sits largely on a flood plain near the Johor river that is often inundated due to high tides. Even so, the local zoning map does not show flood risk areas in the town. New housing developments are now under way in areas that were heavily inundated in 2006.

Furthermore, most houses developed in flood risk areas have low [INAUDIBLE]. Private housing developers prefer building low [INAUDIBLE] to minimize construction costs and maximize profits. This development trend makes the ground floor vulnerable to any ordinary flooding in the area. This goes against the traditional Malaysian practice of building houses on stilts.

For cities and towns in the global south, the Malaysian experience reveals three priorities for flood preparedness-- educating and empowering local residents, strengthening the capacity of local authorities, and improving local zoning regulations. First, the local authorities should educate and involve local residents in all flood related issues. This would encourage the residents to form a neighborhood level flood prevention community.

Second, the authorities should establish a reliable flood warning system. They should make sure that firefighters have enough equipment, manpower, and advanced training to respond and rescue. The firefighters should work with local residents, train them, and develop a joint strategy on coping with floods.

Finally, plenty authorities should create a zoning map that shows flood risk areas in town and that prohibits new development in those risky areas. They should provide monetary incentives to residents to raise their house floors above the ground. The authorities should relocate and resettle residents living in flood prone areas to higher ground.

The experiences presented above showed that the residents, as well as local authorities need to strengthen their ability to deal with flood disasters in cities. However, their strengths will not be as effective if they act separately. Both the city residents and local authorities should work together, talk to each other, learn from each other, and act collectively to find ways to deal with flood disaster.

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