

## Floods – the consequence of human intrusion into nature

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Flooding in Malaysia has become a common occurrence. There are frequent flash floods due to sudden heavy downpour that brings about health consequences due to contaminated water supply, poor sanitation and also flood related accidents. The Northeast monsoon season brings floods to many parts of peninsular Malaysia especially the eastern states of Kelantan, Terengganu and Pahang during the months of November to March.<sup>1</sup> This annual occurrence of floods affects mainly the disadvantaged population and as such adequate funding and appropriate planning are required in the country's planning process to alleviate the resulting social and health problems. However measures implemented thus far seem to be temporary rather than permanent as these problems keep recurring year after year. It is time that we pay serious attention to the causes of these floods by asking ourselves where and why they are occurring, and whether anything can be done about it. These are questions that need immediate answers. When a disaster strikes there are many people on the scene, but after a period of 1, 2 or 3 months the enthusiasm dies down, the issue is forgotten until the next episode occurs. This is a common phenomenon around the globe. People have taken nature for granted; exploitation is without reason or control. It is a rape of nature beyond compromise. The human race has to wake up and put appropriate measures in place to overcome the impending catastrophic consequences. Food safety is affected, vector-breeding increases due to habitat changes, quality of water is compromised due to infra-structure destruction and all these lead to increased incidence of malnourishment, water- and vector-borne diseases. People are vulnerable to changes in the climate due to many factors, some of which can be social, economic or political.<sup>2</sup> Floods affect impoverished populations because they live in overpopulated areas with compromised environmental conditions.<sup>3</sup> All these conditions have a significant impact on the health of the population. To overcome this we need to understand the factors responsible for it and address these issues in the Malaysian 5-year development plans. It is a continuous process and not

a one-off issue. We should adopt a responsive approach with concrete steps rather than being reactive only when the flooding takes place.

Currently all blame is placed on climate change but who is responsible for this? We with much humility must accept this blame and take upon ourselves to put the remedial process in place. We know that extreme weather conditions due to climate change are a main contributor to flooding in many parts of the world. Globalisation has affected all of us for the better and equally for the worse as well. The multifactorial changes brought about by carbon dioxide emissions, increases in temperature and sea-level, changes in precipitation, wind and wave patterns have a direct or indirect impact on human well-being. As we see today children are the most affected among the general population. A report by UNICEF identifies the dangers faced by children due to extreme weather conditions.<sup>4</sup>

Remedial actions can be initiated by man or by nature. Nature has the ability to manage the environment against the onslaught of man. It is vulnerable yet it is able to adapt itself to the vagaries of development. The natural disasters we see today can be considered as the remedial measures taken by nature to correct human intrusion into the environment. Storms, floods and droughts seen today are due to the effect of El Nino. These warm currents are seen to affect the patterns on the monsoons in our region, giving rise to natural disasters. Vectors of disease such as malaria, dengue, Australian encephalitis and the Rift Valley Fever are seen to increase due to these changes.<sup>5</sup> Floods can potentially increase the transmission of communicable diseases such as water-borne and vector-borne diseases. The water-borne diseases can be typhoid fever, cholera, leptospirosis and hepatitis A and the vector-borne diseases can be malaria, dengue and dengue haemorrhagic fever, yellow fever, and West Nile fever. In most outbreaks of water-borne diseases, population displacement has been identified as the cause. The contamination of potable water supply by floods is a major risk factor as the displaced population resorts to use of other untreated sources of water.

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There can also be other diseases such as wound infections, dermatitis, conjunctivitis, ear, nose and throat infections due to contact with polluted water. However an epidemic-prone infection that Malaysians need to be aware of is leptospirosis as it is on the increase. Infected rodents discharge large amounts of the organisms into the environment which is transmitted to humans through contact with the skin and mucous membrane. Outbreaks of leptospirosis have been known to occur in Brazil (1983, 1988 and 1996), in Nicaragua (1995), Krasnodar region, Russian Federation (1997), Santa Fe, USA (1998) Orissa, India (1999) and Thailand (2000).<sup>6</sup> In Malaysia the true extent of the disease is not known because there is poor coordination of the research between the veterinary and medical sectors. With better coordination and improved diagnostics, the true status of the disease can be established.<sup>7</sup> Malaria outbreaks have been recorded in Costa Rica (1991), Dominican Republic (2004) and West Nile Fever in Romania (1996-1997), Czech Republic (1997), Italy (1998).<sup>6</sup> Malaria control in Malaysia has been very good and in 2012 there were only 4725 cases recorded.<sup>8</sup> However with the emergence of the zoonotic form of malaria caused by *Plasmodium knowlesi*, we have to be vigilant as environmental changes can impact on vector breeding resulting in increase of the disease leading to a fatal outcome.<sup>9</sup>

Malaysia experienced one of worst floods in history at the end of 2014, in which about 200,000 people were affected with a death toll of 21.<sup>10</sup> The states that were affected by these floods were Kelantan, Terengganu, Pahang, Perak and Sabah. At the end of 2014 there was a significant increase in rainfall and the perigeon tide (due to the influence of the moon) which blocked the flow of water into the sea resulted in the flooding. So can we speculate that together with these reasons environmental degradation also contributed to this disaster? In Sabah and Sarawak in January 2015 some 3,000 people were displaced due to floods and the cause was attributed to deforestation. There is much work to be done to find the right answer. The blame game must stop

and the responsible agencies must initiate cross-sectorial collaboration. Remedial actions must be sustainable.

Innovative and progressive reforms must be incorporated into the building sector especially in flood prone areas. The federal agencies need to look at their flood mitigation policies, revise redundant approaches, undertake drastic measures to curb environmental exploitation and be prudent in expenditure and take serious consideration of environmental impact assessment reports.

*Keywords: Climate change, floods, environment, disease*

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