

What is a flood control?

Flood control refers to all methods used to reduce or prevent the worst effects of flood water

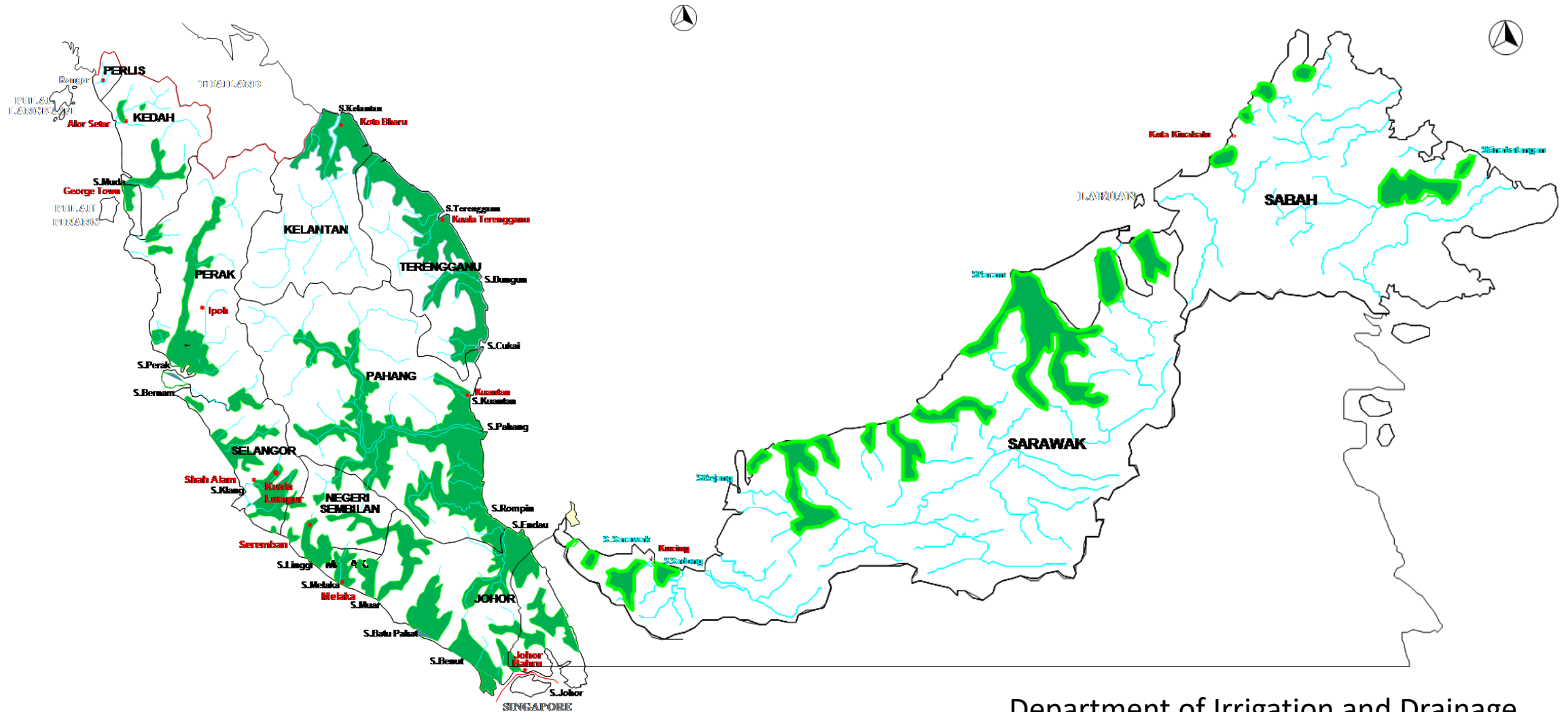


Definition of Flood



Flood can be defined as a body of water, rising, swelling and overflowing land not usually thus covered. Also, overflowing of the bank of a stream, lake or drainage system of water onto adjacent land as a result of storm, ice melt, tidal action and channel obstruction.

Flood Prone area in Malaysia



Department of Irrigation and Drainage

Causes of Flooding



- **Heavy Rains**

Drainage systems and the effective infrastructure design aid during heavy rains. They help the drainage of excess water into reservoirs in an easy way. But in cases of heavy rainfall, the systems stop working. Thus flood is caused.



- **Overflowing of the Rivers**

The people living along the river always have a risk of life from the overflowing of the Rivers. To prevent such a situation, a string of dams are built. However, if these dams are not managed properly, they may cause flooding and huge damage.

Causes of Flooding



- **Storm Surges & Tsunamis**

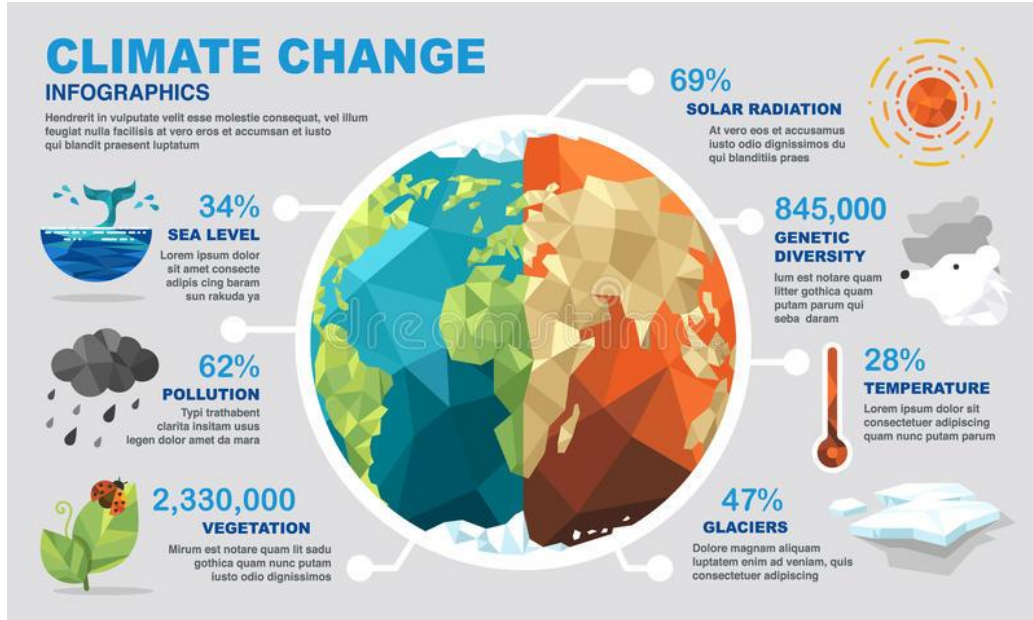
Storm surges related to hurricanes and other storms can lead to significant flooding, as can tsunamis that are sometimes caused by underwater earthquakes. For example, in 2004, an earthquake off the coast of Indonesia created a tsunami that gave little warning before coming ashore.



- **Deforestation**

The cutting of trees in a reckless manner. i.e. deforestation is also a major cause of man-made flooding. Trees prevent soil erosion and also the loss of crops. The vegetation is also enriched as a result of more and more trees. This also blocks the massive flow of rain, thus preventing flooding.

Causes of Flooding



- **Climate change**

The climatic changes caused due to human practices also add to the risk of flooding. Human beings cut trees in a large number, thus affecting the process of photosynthesis. Thus increased level of carbon-di-oxide in the atmosphere cause changes in climate posing threats of natural disasters like floods etc.



- **Urban Drainage Basins**

Many of our cities are made of mostly concrete and other impermeable material. When you have an urban drainage basin that is made of concrete, there is no ground for water to sink into. So, when those drainage basins fill up, it is going to mean flooding for low-lying areas.

The Main Types of Flood

Flash Floof

are fast-moving waters that sweep everything in their path. They are caused by heavy rainfall or rapid snow thaw. Floods usually cover a relatively small area and occur with little to no notice, generally less than six hours. The rapid water torrents can move large objects such as cars, rocks, and trees.



River Flooding

are characterized by gradual riverbank overflows caused by extensive rainfall over an extended period of time. The areas covered by river floods depend on the size of the river and the amount of rainfall. River floods rarely result in loss of lives but can cause immense economic damage.



Coastal Flood

are caused by strong winds or storms that move towards a coast during high tide. When powerful waves breach the coast's dune or dike, the area is usually flooded. Coastal areas with fewer defenses and lower elevation are the most affected. The best time to repair the breach is during low tide.



The Main Types of Flood

Urban Flood

occur when the drainage system in a city or town fails to absorb the water from heavy rain. The lack of natural drainage in an urban area can also contribute to flooding. Water flows out into the street, making driving very dangerous. Although water levels can be just a few inches deep, urban floods can cause significant structural damage.



Pluvial Flood

form in flat areas where the terrain can't absorb the rainwater, causing puddles and ponds to appear. Pluvial flooding is similar to urban flooding, but it occurs mostly in rural areas. The agricultural activities and properties in areas where pluvial floods have occurred can be seriously affected.



Man-made Flood

Man-made flood have an element of human intent, negligence, or error involving a failure of a man-made system, as opposed to natural disasters resulting from natural hazards.



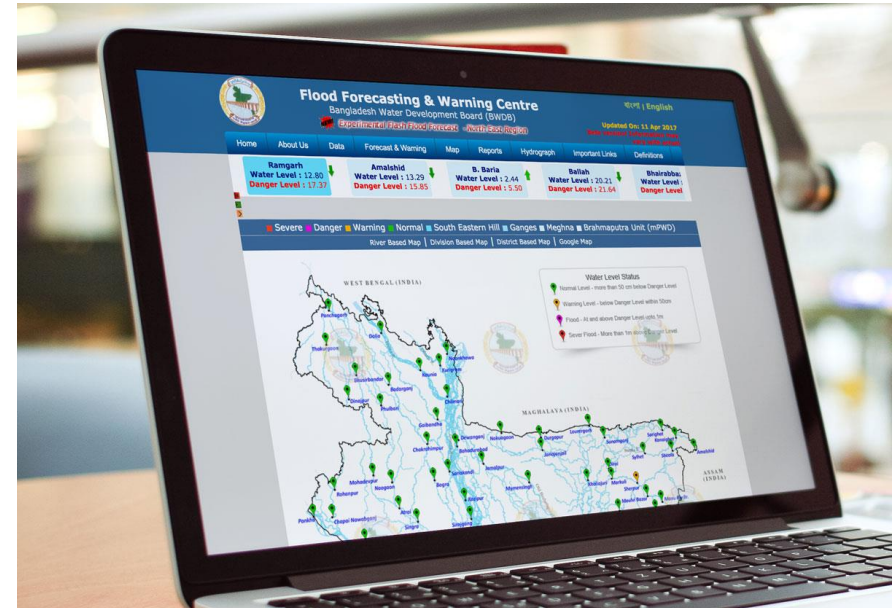
Methods of Flood Control (Structural)

- Dams (Reservoirs)
- Diversion Canal
- Self closing flood barrier
- River Defences
- Coastal defences

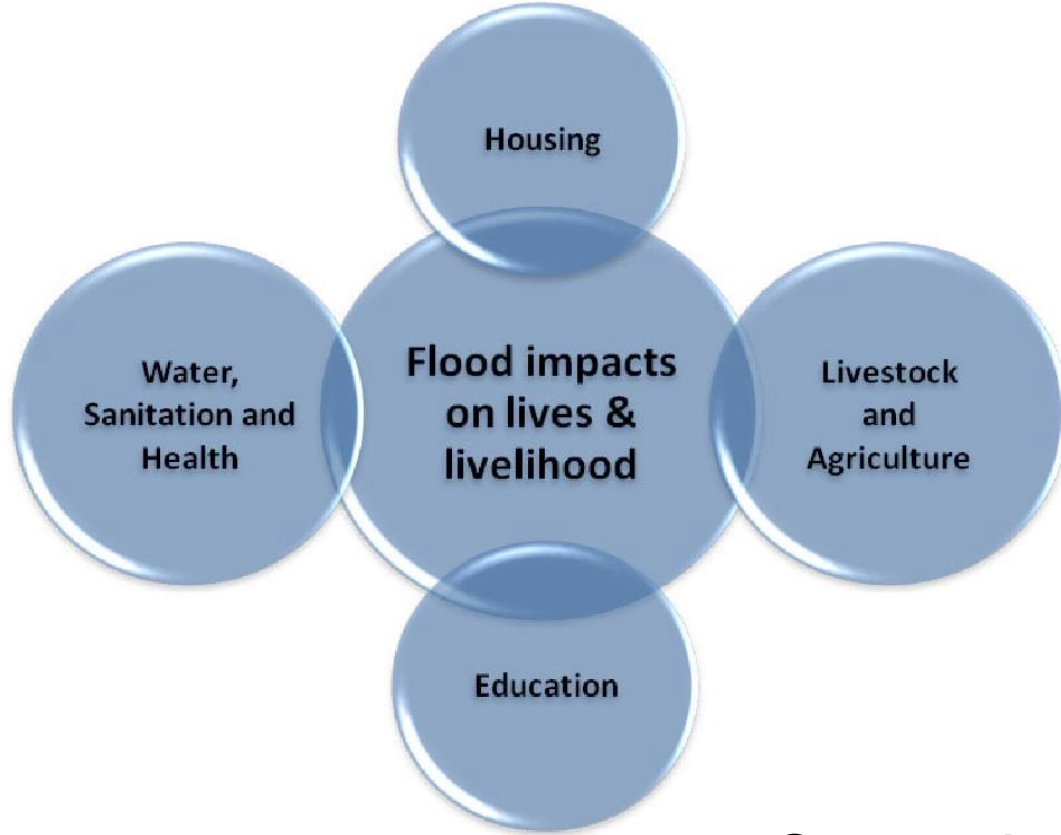


Methods of Flood Control (Behavioural)

- Accepting Loss
- Public Relief Funds
- Flood insurance
- Flood Forecasting and warning



Impact of Flood in Malaysia



Type of Damage		Value of Loss
Living quarters		RM1.6 billion
Business premises		RM0.5 billion
Vehicles		RM1.0 billion
Agriculture		RM90.6 million
Manufacturing		RM0.9 billion
Public assets & infrastructure		RM2.0 billion

Department of Statistics, Malaysia

Overall Assessment on Impact of Floods in Malaysia

The flood that hit this nation in the late of 2021 and early 2022 had caused **damage to living quarters, vehicles, business premises, manufacturing and agriculture sector as well as public assets and infrastructure**. Overall losses due to the floods recorded RM6.1 billion which equivalent 0.40 per cents as against nominal Gross Domestic Product