



The Challenges of Flood Control



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With the advent of climate change more and more countries around the world are experiencing the social, economic and environmental upheaval associated with extreme flooding. The increasing prevalence of flooding means that effective and accessible control measures, such as HESCO barriers, are more important than ever before.

The good news is that anti-flooding technology has evolved to such an extent that the impact of flooding on life and property can be much reduced. Traditionally, sandbags and concrete walls were the main forms of flood control, but as we shall explore, these countermeasures suffer from logistical, environmental and monetary drawbacks.

Recognising the downsides of traditional anti-flood measures, HESCO manufactures rapidly deployable flood barriers which can be quickly assembled without technical expertise and are filled with locally sourced materials such as rocks or soil. The units are based on our Concertainer barriers which we have supplied to armed forces across the globe for the past 21 years and which are currently being used by NATO forces in Afghanistan.

For 21 years we have been working in partnership with governments, particularly those in the United States, UK and Thailand, to provide cost effective flood defences. This experience has helped us establish some of the core challenges and provide solutions surrounding flood control.

The Impact of Climate Change

Unfortunately, flooding is becoming a bigger threat to countries across the world. This is largely due to climate change which scientists say is leading to the increasing prevalence of flash floods.

According to a study from the Organisation for Economic Co-operation and Development (OECD), climate change and urban development has the potential to triple the amount of people exposed to coastal flooding by 2070. Given that these estimates do not take into account inland flooding, it is clear that the world has a serious challenge on its hands.

Despite the increasing prevalence of flooding many governments have not reacted with a commensurate increase in budgets for anti-flood measures. This is not necessarily because of the budget austerity many governments across the globe are currently imposing on public expenditure but that a long term commitment to the financing of flood defences has not been made.

This is understandable for countries which only rarely experience flooding. Additionally, it is very easy for commentators in the media to accuse governments of being 'profligate' with public money when they do invest in infrastructure projects with no immediate need.

However, it is important to note that according to the OECD anti-flood mitigation strategies, particularly coastal defences, can take up to 30 years or more to implement. In other words, governments need to prioritise their coastal and city flood defences now if the floods of tomorrow are to be effectively tackled.¹

The Thai Experience

Given the huge monetary cost of flooding, and the lead time required in order to install effective defences, it is clear that investing in defences is something that is worth being prioritised by government. A good example of its importance is the Bangkok flooding of 2011 which Prime Minister Yingluck Shinawatra called "the most critical natural disaster in Thai history".

HESCO barriers were used to ensure the Din Dang Highway, Bangkok's principle highway, could stay open, as well as Bangkok's Don Mueang Airport, residential homes and other key infrastructure. This operation to keep open the highway enabled Bangkok to remain a functioning city throughout the flooding. Food, medical supplies, troops and civilians were all able to enter the city for the six weeks during which the city was flooded.

Protecting areas of strategic importance, especially those that are absolutely critical to the economy and daily life, such as hospitals, power stations and factories is absolutely essential. As the lifeblood of the economy and society, any disruption to these areas will always have a serious multiplier effect.

As someone who experienced the impact of the Thai flooding on the civilian population I can tell you that keeping the highway open was absolutely vital in preventing the city fall into chaos. Many people ended up fighting for food and there were serious sanitation issues that could have led to a large humanitarian problem. If the highway had not remained open during this period then there could have been more serious social issues.

A lesser known fact about the Bangkok flooding is that many of the commercial districts were hit, meaning many companies could not manufacture their products. Since the flooding many of the Japanese manufacturers and other companies based in Bangkok have approached the Thai government

to encourage them to invest in long term flood defences to protect their facilities. Again, this is an example of the broader social and economic consequences of flooding that governments must bear in mind when considering whether to invest in defences.

Meeting the Challenge

Once a flood has been predicted, or in unfortunate cases has struck without warning, the most obvious challenge facing authorities is deploying flood protection systems as soon as possible in order to prevent further loss of life or damage.

Sometimes the authorities will have plenty of time to prepare, and other times they may only have a couple of days. In our experience, the best – and only – way to get around this is to reduce the amount of time and resources it takes to transport and erect flood barriers once the alarm has been sounded. Manpower, fuel, vehicles and time are all in limited supply during a crisis situation and it is essential flood barriers do not consume too many of these resources. HESCO barriers meet this challenge because they are quick to put up and do not require individual technical skills or special foundations to erect.

Time is never on your side when a flood hits, and whilst sandbags have been the traditional method of flood protection, they require an excessive amount of time to put up. For example, a 10 metre long wall can be built from a Mil 1 Concertainer unit, which is 1.37 metres high, by two men with suitable material-handling equipment in less than 20 minutes. An equivalent wall of 1,500 sandbags would take 10 men seven hours to build. It is also essential flood barriers do not require specialist tradesmen or equipment to assemble, as this limits their flexibility at a time of emergency response.

This is something HESCO is keenly aware of and when the torrential flooding of 2007 hit Tewkesbury we were able to deploy over a kilometre of chest high barriers in less than 27 hours. This is a task that would have taken an estimated two weeks longer to complete using traditional sandbags. In short, quickly erecting flood defences is the only way of getting around the fact that the authorities may have very little forewarning of impending floods.

The cost implications of investing in flood defences is something we are also aware of, which is why our barriers can be flat packed in storage when not needed, transported easily and then quickly deployed at times of flooding to the area's most in need.

Another challenge many countries face is enabling water to flow quickly in and out of the cities, canals and other public waterways. Unfortunately, many governments do not spend enough money on maintaining their waterways during 'peacetime', meaning they are unable to cope at a time of crisis. In our experience, those countries which invest throughout the year are best placed to cope during a flood.

A good example of an agency that consistently invests in its waterways is the US Army Corps of Engineers, the federal agency and army command of 38,000 military and civilian personnel. As a HESCO client, we worked with them during Hurricane Katrina and Gustav. Most recently, we worked with them in Southeast Missouri to deploy 9,000 lineal feet of units that helped protect crops, communities and infrastructure from a swollen Mississippi river.

Unfortunately, it takes a disaster for some authorities to realise the importance of their waterways. Following the devastating floods of late 2011, the Thai authorities are now working with HESCO to prepare for future flooding scenarios. One of the considerations is whether to construct huge artificial waterways north of the capital to divert flood waters away.

The good news is that provided authorities consistently pay attention to their flooding countermeasures throughout the year property and assets can be protected at times of crisis.



¹<http://www.oecd.org/dataoecd/59/36/39729575.pdf>