

Urban Areas and Climate Change

By Michael Hart

Urbanization

Over the past five decades a trend has been apparent in China and across the globe, people are moving to cities. From 2005, the municipality of Tianjin has seen its official population grow by nearly 5 million to a total of approximately 15 million people. And globally, there are hundreds of cities like Tianjin that have experienced rapid increases in their population. On the one hand, that is good. Cities create more vibrant economies, create opportunities for people across the income and education spectrum and done correctly, cities can be very green. Dense cities create the opportunity for profitable and robust mass transit systems and help us reduce our footprint on the earth.

The downside of this is that as we rush for density, we sometimes cover our green space and drain swamps and wetlands that are helpful in mitigating flooding. Additionally, we seem to cluster in cities along the coasts or along major rivers. This puts us right in harm's way should the climate change or if weather events become more extreme.

Climate Change

Over this same period, the weather indeed appears to be shifting its patterns with dry and rainy seasons being less dependable and extreme weather becoming more frequent. Estimates vary, but most experts believe we will see significant sea level increases for the next 20 to 30 years. In November 2019, Venice has experienced flooding at a level not seen since 1966, its worst year on record. It well might be one of the first and most prominent cities to face economic collapse on account of rising sea levels. A mitigation plan was created years ago, but is yet to be completed and so Venice continues to suffer more extreme weather-related events. A recent study released by [ClimateCentral.org](https://www.climatecentral.org) has attempted to highlight which global cities will be impacted by the expected rising ocean levels. The shocking part of their report was just how understated they believe previous estimates have been. They now estimate 300 million people will be impacted. For cities that have already experienced extreme flooding, this report brings dire news. For many others who have to date been largely spared, it is time to double check what the climate might bring in the next several decades. The impacts will be spread widely. Tianjin built at a low elevation needs to prepare, but there are major cities on every continent that appear to be in harm's way.

If sea levels rise, that is a huge problem. Even if they don't, as the global population continues to cluster in urban areas that itself can cause several issues if we don't plan well. When we build urban areas, we cover ground that previously would have absorbed water during rain or floods.

We sometimes drain and remove wetland areas that protect us from large tidal action and erosion. We aren't taking nearly as good care of our natural environment infrastructure as we are of our roads and rails. This leaves us exposed to nature's extremes.

Future Development

I have attended a number of conferences lately where large global property investors have shared that they are now running studies on projects and cities before they move forward with development. These groups who have invested for decades don't want to be caught out by extreme weather. Slowly this will mean international money starts to shy away from the most vulnerable locations and drive development in the cities seen as more stable in terms of future climate risk. But what about local developers? It seems likely that large cities will continue to be developed at least by their local developers who don't have the experience or knowledge to develop in other markets. More advanced developers may choose projects within their home market, but try to choose relatively safer projects, those not developed on vulnerable sites or with mitigation concepts included. In Singapore, a country at risk of future sea level rises, there is already much discussion and planning around this eventuality. Developers there are some of the most forward looking that I've seen. In other cities things don't look that promising. Try asking a Chinese developer to show you on a map where the "100-year flood" lines are, a common practice in many markets that help to remind us how high water has gotten historically. These things aren't generally even in their vocabulary.

Lessons Learned

For existing projects in cities that are likely to face increasingly extreme weather events, there are a few things developers can do. The first is to start moving important electric systems such as transformers and other power and communications systems to higher floors. I worked in a building once that was out of commission for weeks because the basement got flooded for only a couple days but took out our electrical infrastructure. Drains and pumping systems can also be improved, but those systems only really get tested when the difficult times come. I know of one shopping mall in Tianjin that has already put in place equipment to seal off their ground floor and parking garage doors in the case of floods, wise since that section of town is one of the most flood prone. Tenants will need to start thinking about this issue and start asking about such plans when they look for new locations and have business continuity plans that ensure their businesses can continue to function even if their buildings or cities get flooded.

Outlook

If there is a silver lining to this sort of news, it is that we are becoming aware of the possibility of rising sea levels and extreme flooding in some major metropolitan areas and we are starting to discuss solutions. In Singapore some projects are now being built upon ground that has been raised in anticipation of future sea rises. Other cities are working to preserve or rebuild

mangrove forests that can help act as barriers to wave action and others are looking to reduce the pumping of ground water which brings challenges as sea levels rise. So, in addition to looking for ways to reduce our impact on the climate, we should take this opportunity to build and prepare our cities for changes that are likely to result from extreme weather and rising sea levels.

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