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Resilient Forms of Living with Flooding: A Case Study of Bangrakam, Phitsanulok, Thailand

Abstract

Flooding has been a part of nature in Thailand for ages and it will continue to exist in the future. In the past, conventional settlements were created along water canals for several purposes, namely, for their livelihoods as Thais used of floodplains for growing rice and for farming. People used waterways as their main transportation to travel in and around community. As a climate change has continuously disrupted human over the last few decades resulting in a wide range of problematic flooding in Thailand. Flood forecasting and prevention are imperative preparedness regarding with engineering resilience strategies; however, this article aims to explore how Thais can be resilient and adaptive to live harmony with water by learning from Bangrakam case study. Flooding has surprisingly not been seen as a problem for many or most Bangrakam households. Amazingly, people have adjusted their houses and livelihood to coexist with water in friendly ways. Learning from indigenous wisdom of Bangrakam case reminds Thais to understand our indigenous approach which is more flexible to live with watery environment in more friendly ways.

Bangrakam is one of the nine districts of Phitsanulok province, which is located in the lower part of the north region in Thailand, which is about 377 km. far from Bangkok.



Figure 1: Location of Phitsanulok, Thailand. (Source: Accessed on 09:11:2013, retrieved from <http://www.sawadee.co.th/thai/>)

Bangrakam district is located in the southwest of Phitsanulok, or 17 km. from the city center. The total area of Bangrakam is about 992,043 square kilometers and it consists of 11 sub-districts (Bangrakam District Administration, 2011).

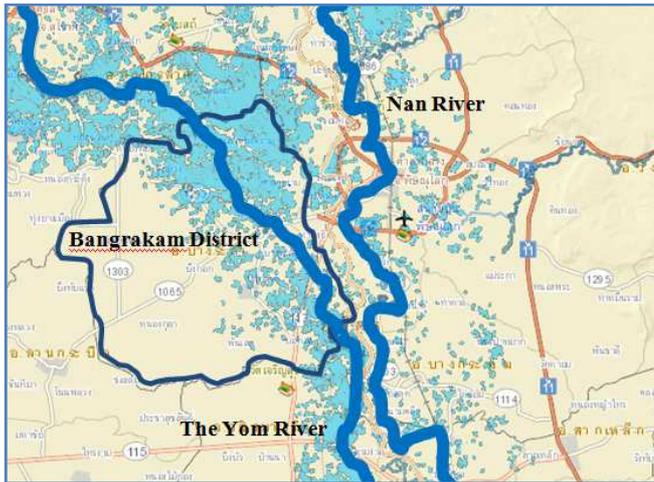


Figure 2: Map of Bangrakam District, Phitsanulok, Thailand (Source: GISTDA, accessed 28:11:2011, retrieved from <http://thaiflood.voicetv.co.th/map/>)

The term “Bangrakam” mentioned in this paper refers to Bangrakam sub-district, which is a water-based small village which was settled on the right bank of the Yom River. The total area is 135.58 square kilometres which is mainly agricultural land, while 6 percent of the total area is residential areas, and the rest are other uses. About half of Bangrakam district is situated on the river basin resulting in a recurrence of seasonal flooding for a few months from late June to late October.

Interestingly, Bangrakam people have adjusted their houses and domestic spaces to live in harmony with water. High stilt houses, elevated floors, and elevated storage shelves are illustrations. During the flooding season the local can live on extra upper floors; moreover, many households go fishing for supplementary their income. Learning from the Bangrakam case, reflects how to live together with water. Local housing styles in Bangrakam presents resilient forms of living in several ways; as people adjust their houses and domestic spaces to live with water in more effectively and harmony with climate change (Resilient city.org).

Firstly, housing design and construction were built based on wood which are local materials. *Secondly*, housing plan was designed to allow natural light and natural ventilation to create comfortable zone for living in tropical climate. *Thirdly*, number of windows and ventilation underneath roof are crucial elements to enhance day-lighting. More particularly, balcony and semi-enclosed floors can create shading and comfortable spaces. *Fourthly*, flexibility of use is indigenous wisdom how people adjust their domestic spaces to live harmony with either dry or wet seasons. Stilt houses are responsive building structures, particularly for water-based settlement which allow people to carry on their daily chores and to void flooding during the rainy season. Attached platforms and elevated shelters were made by bamboos as extra rooms for living, storing, and surviving during monsoon seasons.



Figure 3: Adaptability of house floors in responsive with levels of flood water.



Figure 4: Extra platforms were made by bamboo constructions during the rainy season to avoid flooding.

Fifthly, use of local materials are alternative, bamboo is a case in point which is water plants serving for several purposes. Many households use bamboos for building walls, roofs, shelters, fences, street furniture, cloth airers, fishing equipments, and so on. *Finally*, local labour, local supply of materials, and accessible building technology are important factors for Bangrakam to achieve its resilience in long term maintenance. These all elements make vernacular architecture in Bangrakam more resilient and remind Thais to consider their indigenous wisdom of living.



Figure 5: Bamboos are local building materials which people use for several purposes.

Findings from observation and in-depth interviews revealed that wooden stilt houses are the most suitable forms of architecture in Bangrakam; as this kind of houses has less damaged from flooding. However, there are three issues should be deal with, namely, sanitary system should be improved with better maintenance; construction of long columns should be reinforced; and durability of building materials should be further studied.

Conclusion

Living in the future will become more complicated, due to a wide range of unpredictable factors, such as climate changes, rising sea water levels, global warming, disasters, conflicts among humans, and other unexpected changes. Flooding is a problematic environment in and around Thailand. Learning from Bangrakam case reflects several aspects of adaptability in living with water based on resilient housing design. Physically, people learned how to adjust their houses to avoid damage from flooding. Economically, many households can generate extra income from fishing during wet season. Socially, the locals lived closely as same family to help and to share resources to each other during the flooding. Adaptability of houses and domestic spaces, flexibility of livelihoods, and ties of community are survival alternatives for Thais to consider their own indigenous wisdom of how to live with nature, particularly in flooding environment in more friendly future.

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