## Sponge Urbanism as a Resilient City Design to Overcome Urban Flood Risk, for the Case of Aluva, Kerala, India

Authors : Gayathri Pramod, Sheeja K. P.

Abstract : Urban flooding has been seen rising in cities for the past few years. This rise in urban flooding is the result of increasing urbanization and increasing climate change. A resilient city design focuses on 'living with water'. This means that the city is capable of accommodating the floodwaters without having to risk any loss of lives or properties. The resilient city design incorporates green infrastructure, river edge treatment, open space design, etc. to form a city that functions as a whole for resilience. Sponge urbanism is a recent method for building resilient cities and is founded by China in 2014. Sponge urbanism is the apt method for resilience building for a tropical town like Aluva of Kerala. Aluva is a tropical town that experiences rainfall of about 783 mm per month during the rainy season. Aluva is an urbanized town which faces the risk of urban flooding and riverine every year due to the presence of Periyar River in the town. Impervious surfaces and hard construction and developments contribute towards flood risk by posing as interference for a natural flow and natural filtration of water into the ground. This type of development is seen in Aluva also. Aluva is designed in this research as a town that have resilient strategies of sponge city and which focusses on natural methods of construction. The flood susceptibility of Aluva is taken into account to design the spaces for sponge urbanism and in turn, reduce the flood susceptibility for the town. Aluva is analyzed, and high-risk zones for development are identified through studies. These zones are designed to withstand the risk of flooding. Various catchment areas are identified according to the natural flow of water, and then these catchment areas are designed to act as a public open space and as detention ponds in case of heavy rainfall. Various development guidelines, according to land use, is also prescribed, which help in increasing the green cover of the town. Aluva is then designed to be a completely flood-adapted city or sponge city according to the guidelines and interventions.

Keywords : climate change, flooding, resilient city, sponge city, sponge urbanism, urbanization

**Conference Title :** ICUHS 2020 : International Conference on Urban Hydrology and Sustainability **Conference Location :** Dubai, United Arab Emirates

Conference Dates : March 19-20, 2020

1