Amphibious architecture is an adaptive flood risk reduction strategy that works in synchrony with natural cycles of flooding to reduce the hazard vulnerability of flood-prone regions and increase their long-term disaster resilience.

Numerous low-income areas of Jamaica are subject to severe repetitive seasonal flooding. Lacking adequate government support, these communities require a flood mitigation strategy that is both affordable and simple to implement.

The communities of Port Maria and Bliss Pastures, Jamaica are two communities that are significantly impacted by seasonal flooding. Flooding in these areas causes significant damage to homes and creates difficulties due to overflowing open pit latrines. Despite repetitive flood damage, Jamaicans continue to live in these flood-prone communities. Ameliorative retrofit is a cost-effective and adaptive way to keep inhabitants and their possessions safe. By applying a buoyant foundation system using buoyant blocks composed of expanded polystyrene, members of these low-income communities can retrofit their existing homes with amphibious foundations at minimal cost, protecting themselves and their possessions from flood damage. Half-length telephone poles or locally harvested decay-resistant tree species can be used for the vertical guidance posts. Construction costs of the amphibious retrofits, including both labor and materials, are estimated at $3,765 USD ($94/m²) for the Port Maria house and $2,414 USD ($51/m²) for the Bliss Pastures house. If the labor is donated, the cost is reduced to $2,064 USD ($51/m²) for the Port Maria house and $1,199 USD ($54/m²) for the Bliss Pastures house, illustrating the potential for low-income areas to retrofit safely for themselves and their properties.

The LIFT House pilot project for two families was designed by Masters student Prithula Prosun at the University of Waterloo School of Architecture and built within the boundaries of the Housing and Building Research Institute in Dhaka. It floats with rising water levels due to flooding and water logging. It maintains its original position as water recedes. The design stands as a prototype of environmentally compatible, sustainable amphibious retrofits for low-income urban communities.

Amphibious retrofits to houses in the Mekong Delta can increase community resilience and improve the financial stability of residents by reducing property damage and the need for relocation in times of severe floods.

Vietnam’s Mekong Delta is home to 17 million people (22% of the national population), most of whom are agricultural and aquacultural farmers. The flood season in the Mekong Delta occurs typically lasting six months from July to December. With anthropogenic climate change comes increased risk of flood; annual runoff from the upper basin of the Mekong is projected to increase by 21% by 2030, with annual precipitation expected to increase by 200mm a year. Under climate change there will likely be greater flood extremes and more numerous and damaging extreme rainfall events, with the potential for greater disruption to Mekong Delta communities.

Low-cost amphibious retrofits to existing houses can provide a solution to flood-vulnerable populations, allowing residents to stay on their farms during flood events with little damage to their homes. Amphibious retrofits add resilience to flood-adapted communities primarily forest systems by decelerating the destabilising ‘shocks’ that flooding causes in communities. At the household level, floods can disrupt livelihoods, trigger displacement, and introduce additional costs that lower-income families can usually ill afford.

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