

The nature-based climate adaptation program for the urban areas of Penang Island: developing a model for urban climate adaptation.

Summary

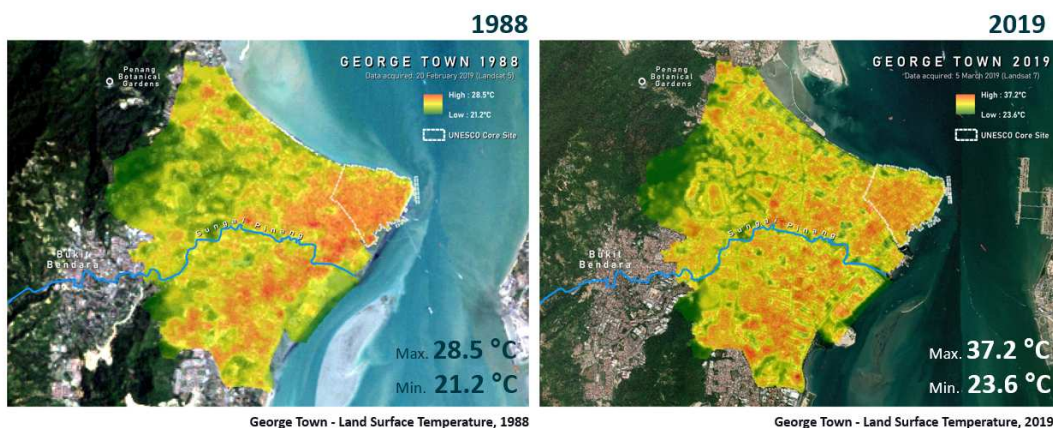
Urban areas in Malaysia are highly vulnerable to climate change impacts, particularly rising temperatures and extreme weather events. In the case of Penang Island, extreme weather events frequently lead flooding, economic losses and loss of lives. According to the World Health Organization, under a high emissions scenario, the number of days with heat waves in Malaysia is predicted to increase from 20/year in 1980 to 200/year in 2050. This will severely impact public health, particularly in the most vulnerable communities and a climate adaptation program is needed.

Nature-based solutions have proven to be the most effective adaptation strategies for microclimate regulation and Urban Heat Island (UHI) effect reduction, while also increasing adaptive capacity and benefiting hydrological, ecological and social factors. A nature-based climate adaptation program for the urban areas of Penang Island was initiated in 2019 with the goal of reducing flooding events and overall temperatures, building social resilience and reducing gaps in institutional capacity.

A science-based approach was adopted, with remote sensing and thermal imaging cameras used to identify the most heat stressed urban areas as priorities for intervention and also to monitor the development of pilot projects in order to identify the most effective strategies for replication. Communities were engaged extensively to help identify the main challenges and design the program. As the first municipal climate adaptation program to have been developed for Malaysia, the program will act as pilot project for the country and region, with a strong knowledge transfer component. The Penang program was awarded the EIT Climate-KIC Climathon Global Cities Award in January 2020 and was approved to receive US\$10 million from the Adaptation Fund in October 2021.

Keywords

Climate change, climate adaptation, nature-based solutions, urban resilience.



Land surface temperatures in George Town, Penang. Comparison between 1988 and 2019. Source: Think City.



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