

A comparative study of territorial hubs for climate change adaptation in Singapore, Australia, and Japan

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In recent years, countermeasures against flooding caused by intense rainfall in short-duration—as part of strategies toward climate change adaptation—has been identified as a key issue in the fields of architecture and urban design. To advance these efforts, it is becoming increasingly important to adopt a watershed-based approach—one grounded in topographical features rather than administrative boundaries tied to the modern planning—and to strengthen the resilience of inhabited areas by evoking behavioral changes among residents, taking into account land use from the past to the present.

Since 2025, the authors have been engaged in a joint research project involving researchers from Singapore, Australia, and Japan. This project aims to establish an internationally comparable framework that transcends differing topographical and social characteristics, enabling the mutual comparison of leading examples. In this study, we focus on cases where physical spaces serve as territorial activity hubs to provide exhibitions, learning programs and/or workshops to local communities, and we compare and analyze these cases.

We have selected four cases—Tsurumi River Watershed Center and River Disaster Prevention Station of Kano River Tsukamoto District in Japan; Living Lab Northern Rivers in Australia; and Marina Barrage in Singapore—to conduct a comparative analysis of their facility sizes, target areas, functions, and programs offered. The findings revealed that facility scales vary in response to the size of the target area; that functions and activities serving the community are provided as an adjunct to the primary objective of disaster management; and that these facilities operate on a dual-use basis by incorporating recreational functions during normal times. Furthermore, the study examined how these initiatives function at a right measure to the local context and operate through forms of territorial fitting integrating multi-scalar relationships.